



State of Ohio Environmental Protection Agency

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George V. Voinovich
Governor

Donald R. Schregardus
Director

CERTIFIED MAIL

NOTICE OF DEFICIENCY

September 10, 1992

Mr. Douglas K. Mickey
Master Metals, Inc.
2850 W. Third Street
Cleveland, Ohio 44113

RE: CLOSURE PLAN
Master Metals, Inc.
OHD 097 613 871/02-18-0133

Dear Mr. Mickey:

On March 20, 1990, Ohio EPA received from Master Metals, Inc. a closure plan for five (5) waste piles (S03) and two storage areas (S01) located at 2850 W. Third Street, Cleveland, Ohio.

This closure plan was submitted pursuant to Rule 3745-66-12 of the Ohio Administrative Code (OAC) in order to demonstrate that Master Metals, Inc.'s proposal for closure complies with the requirements of OAC Rules 3745-66-11 and 3745-66-12.

The public was given the opportunity to submit written comments regarding the closure plan in accordance with OAC Rule 3745-66-12. The public comment period extended from July 30, 1990 through September 4, 1990. No public comments were received by Ohio EPA.

Pursuant to OAC Rule 3745-66-12(D)(4), I am providing you with a statement of deficiencies in the plan, outlined in Attachment A.

Please take notice that OAC Rule 3745-66-12 requires that a modified closure plan addressing the deficiencies enumerated in Attachment A be submitted to the Director of the Ohio EPA for approval within thirty (30) days of the receipt of this letter.

Mr. Mickey
Master Metals, Inc.
Page Two


The modified closure plan shall be in accordance with the following editorial protocol or convention:

1. Old Language is over-struck, but not obliterated.
2. New Language is capitalized.
3. Page headers should indicate date of submission.
4. If significant changes are necessary, pages should be re-numbered, table of contents revised, and complete sections provided as required.

The modified closure plan should be submitted to: Ohio Environmental Protection Agency, Division of Hazardous Waste Management, Attn: Thomas Crepeau, Manager, Data Management Section, P.O. Box 1049, Columbus, Ohio 43266-0149. A copy should also be sent to: Scott Williams, Ohio EPA, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087.

Upon review of the resubmitted plan, I will prepare and issue a final action approving or modifying such plan. If you wish to arrange a meeting to discuss your responses to this Notice of Deficiency, please contact Paul Vandermeer, Ohio EPA, DHWM, Central Office (614) 644-2956 or Scott Williams at (216) 425-9171.

Sincerely,



Donald R. Schregardus
Director

DRS/PV/pas

cc: Tom Crepeau, DHWM, Central File, Ohio EPA
Lisa Pierard, USEPA, Region V
Joel Morbito, USEPA, Region V
Paul Vandermeer, CO, Ohio EPA
Scott Williams, Ohio EPA, NEDO
Sheri Bianchin, USEPA, Region V

Attachment A

Section 2.1, General Information.

1. Master Metals, Inc. (MM) shall revise the closure plan to specify all hazardous waste units on site, including those covered by the closure plan, those listed in Item No. 4 below, those which will remain unclosed and subject to permitting requirements, and any newly discovered unit(s).
2. MM shall revise the closure plan to include diagrams or as built drawings of the units to be closed. These diagrams must clearly show the dimensions, associated structures (piping, sumps, runoff areas), containment features, and any other important aspects of the unit.

Section 2.2, Waste Characterization.

3. MM shall revise the closure plan to indicate the period of use for each hazardous waste management unit undergoing closure. In addition, MM shall specify the hazardous waste codes and constituents for each particular unit (This must include the new waste codes listed in the new Part A Permit including arsenic (D004), barium (D005), cadmium (D006), chromium (D007), selenium (D010), and silver (D011) in addition to the other wastes managed at the site).
4. MM shall revise the closure plan to include the following additional items and units:

Extend the boundary of Area 6 to cover the area between Area 6 and the office building;

Closure of the battery dump area;

The former battery case storage area at the southwest corner of the facility;

The mixing pile near the old furnace;

Container storage areas not designated in Exhibit B of the Consent Decree;

Any areas which were used for bulk load dumping;

Any areas which were used for empty or semi-empty hazardous waste drum storage (i.e., area at the southwest portion of the site);

Any visible waste near or on the old furnace; and

Any container storage area which is or was being used as a waste pile.

Each of the above mentioned units or areas are RCRA-regulated units which have lost interim status or which did not have interim status under federal law. These units shall be closed under the auspices of this closure plan. If any new unit(s) is discovered prior to successful certification of this closure plan, this closure plan shall be amended to include this newly discovered unit(s).

Section 2.2.7, Former Battery Cracking Unit (Area #7).

5. MM shall revise the closure plan to include cadmium and nickel as hazardous waste constituents of concern as this area stored waste nickel-cadmium batteries. These batteries exhibited the characteristic of toxicity for cadmium (D006) and contained nickel which is a hazardous constituent.

Section 2.3, Maximum Inventory.

6. MM shall revise the closure plan to provide an estimate of the maximum inventory of hazardous waste stored or treated in each unit and subdivided by waste code and standard chemical name.

Section 2.4, Schedule for Closure.

7. MM shall revise the closure plan schedule to specify all critical time periods for closure of each unit. Critical events include, but are not limited to, waste removal, decontamination activities, sampling and analysis of both rinseate and soils, remediation of contaminated soils or ground water, times when the qualified, independent, registered professional engineer will be present to oversee closure activities, and grading/backfilling activities.

The schedule shall begin at the point of approval of the closure plan by the Director of Ohio EPA and not rely on calendar dates. MM shall also state that the Ohio EPA inspector will be notified a minimum of five (5) business days in advance of all critical closure activities so he/she may be present to observe or take split samples.

8. MM shall revise the closure plan to indicate that the qualified, independent, registered, professional engineer or his/her representative shall be present to oversee all critical closure activities.

Section 3.0, Closure Procedures.

9. MM shall revise the closure plan to address the following concerns about health and safety:

Air emissions related to closure including nuisance odors or fugitive dust;

The health and safety plan should be consistent with all applicable Occupational Safety and Health Administration (OSHA) standards found in 29 CFR 1910 and 1926;

Workers should be properly attired in personal protective equipment sufficient to mitigate undesirable environmental conditions which arise during closure;

The independent engineer should ensure, through diligent environmental monitoring, that personal protective equipment is sufficient for the environmental conditions at hand;

The health and safety plan shall include a contingency plan for emergencies including the name and telephone number of the site emergency co-ordinator and the telephone numbers for local emergency services; and

Plans for providing decontamination of personnel performing closure activities including delineation of the exclusion zones, contamination reduction zones, and support zones.

10. MM shall estimate the amount of waste material which will be generated during closure activities. Both solid and liquid residues generated from closure of a unit which managed listed hazardous waste and contaminated with listed waste constituents shall be managed as hazardous waste. Solid and liquid residues exhibiting a hazardous waste characteristic shall also be managed as a hazardous waste.

Section 3.1, Storage Pad Cleaning (see also Section 4.1, Concrete Pad Cleaning and Rinse Water Sampling.).

11. MM shall revise the closure plan to indicate that all storage pads (including the drum storage area and the additional units listed above) shall be decontaminated with the scrubber machine. Rinseate shall be tested for all hazardous constituents managed at the particular unit. The storage areas shall be considered clean when concentrations of hazardous waste constituents in the rinseate fall below the following standards:

Fifteen times the public drinking water maximum contaminant level (MCL) for hazardous waste constituents as promulgated in 40 CFR 141.11 and OAC 3745-81-11 for inorganics and 40 CFR 141.12 and OAC 3745-81-12 for organics;

If an MCL is not available for a particular contaminant, then fifteen times the maximum contaminant level goal (MCLG) as promulgated in 40 CFR 141.50 shall be used as the clean standard; or

If the product of fifteen times the MCL or MCLG exceeds 1 mg/l, or if neither an MCL nor an MCLG is available for a particular contaminant, 1 mg/l shall be used as the clean standard.

Section 3.1.2, Waste Pile Storage Areas.

12. MM shall revise the closure plan to provide the exact procedures that will be used to determine the following:

If solids from the manual scraping of the pads can be reclaimed in the on-site rotary furnaces; and

If rinseates can be treated in the on-site acid neutralization system.

MM shall also provide documentation that the proposed discharge of contaminated rinseate to the sewer system will meet the appropriate permit conditions for the discharge.

Section 3.2, Soil Sampling.

13. MM mentions obtaining background samples for determining the natural concentrations of heavy metals in the site soils. There are several important details which must be addressed in order to make this description complete. MM shall revise the closure plan to include the following:

A minimum of twelve background sampling points shall be selected to represent an area not directly affected by any concentrated waste management or product handling activity, unless it can be shown that the area undergoing closure was equally affected by these activities;

Background values shall be calculated as follows,
Action level (upper confidence limit) = mean of the background sample population + two times the standard deviation of the background sample population;

The action level (above) is dependent upon the two comparison populations exhibiting normality and so the owner/operator must demonstrate, through probability plots and either the Shapiro-Wilk test (W-test) or the Kolmogorov-Smirnov test with Lillefors critical values (Conover, 1980), that both sample populations (background and target) are normally distributed;

Background samples must be taken from the same soil type and stratigraphic unit as the comparison samples (**Note** - this may require comparisons of specific conductivity, pH, and an analysis of the grain sizes to make the comparison); and

Areas to avoid when taking background samples include, but are not limited to, past solid or hazardous waste management areas, wastewater treatment areas, roads, parking lots, railroad tracks, storm drains or ditches receiving industrial or urban runoff, and spill areas.

MM shall meet with the Ohio EPA site inspector to determine the initial locations for background samples. Ohio EPA reserves the right to reject a particular background sample location or the results from background sample analysis. MM may then be required to obtain further background samples at mutually acceptable locations.

14. MM shall revise the closure plan to clearly indicate the equations used to determine the sampling intervals for soil sampling. If soils are found to be contaminated, MM must determine the full horizontal and vertical extent of soil contamination resulting from the operation of the hazardous waste management units.
15. MM shall revise the closure plan to state that grab samples will be obtained when performing soil sampling. Composite sampling may be performed to characterize waste and rinseate for disposal purposes. MM shall also list the appropriate analytical methods (from U.S. EPA Publication SW-846, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition) to be used for sample analysis (see also **Section 4.3, Analytical Methods**).

Section 4.0, Sampling and Analysis Plan.

16. MM shall revise the closure plan to indicate that the independent engineer shall oversee all soil sampling at the site.

17. MM shall revise the closure plan to state the specific decontamination method for soil sampling equipment.
18. MM shall revise the closure plan to indicate the type of remedial methods which will be implemented when soil contamination is discovered at the site.
19. MM shall revise the closure plan to state the clean standards for soils and the disposal standards for contaminated soils. Soils contaminated with non-naturally occurring compounds from listed hazardous waste sources (e.g., constituents of F001 hazardous waste) at concentrations above the method detection limit, shall be managed as hazardous waste. Soils contaminated with metals from listed hazardous waste sources (e.g., K069 hazardous waste) above the established background concentrations, using the test for total metals, shall be managed as hazardous waste. Soils contaminated solely with metals from a characteristic hazardous waste source (e.g., D006 hazardous waste) shall be managed as hazardous waste if the soil exhibits the appropriate hazardous characteristic using the TCLP testing procedure. If the soils are determined to be non-hazardous via the TCLP test, but testing for total metals reveals that metals concentrations are above the background standard, then they shall be managed as solid waste.
20. Soils shall be considered clean when concentrations of non-naturally occurring compounds fall below the method detection limit and concentrations of metals fall below the established background standard.
21. MM shall revise the closure plan to delete the statement that mentions returning left-over soils to the borehole. Soils removed from sampling boreholes shall be containerized until testing is completed to determine the appropriate fate of the material. Soil boreholes shall be filled with grout or other approved materials.

Section 5.0, Closure Certification.

22. MM shall revise the closure plan to indicate that the owner/operator's and the independent engineer's certifications of closure shall follow the signature requirements found in OAC 3745-50-42. In addition, the owner/operator certification of closure shall follow the exact wording found in OAC 3745-50-42(D). The certification document must contain evidence that the closure was performed in accordance with the approved closure plan (e.g., photographs, a narrative describing activities, sampling and analysis results, lab records, manifests, etc.).
23. MM shall revise the closure cost estimate to address the items in the above comments.

General Comment

24. MM shall install a ground water monitoring system for the waste piles in accordance with OAC 3745-65-90 through 3745-65-94.

TECHNICAL COMMENTS
TECHNICAL EVALUATION OF PARTIAL CLOSURE PLAN
MASTER METALS INCORPORATED
CLEVELAND, OHIO

Prepared for
U.S. Environmental Protection Agency
Office of Waste Programs Enforcement
Washington, D.C. 20460

Work Assignment No.	:	R05053
EPA Region	:	5
Site No.	:	OHD 097 613 871
Date Prepared	:	July 7, 1992
Prepared by	:	PRC Environmental Management, Inc.
Contract No.	:	68-W9-0006
PRC No.	:	209-R05053
Contractor Project Manager	:	Mike Navetta
Telephone No.	:	615/256-1191
EPA Work Assignment Manager	:	Sheri Bianchin
Telephone No.	:	312/886-4446

1.0 INTRODUCTION

This document is a report on the technical evaluation of the Partial Closure Plan for the Master Metals Incorporated (Master Metals) facility dated April 13, 1992. The technical evaluation was performed by Tracy Hooper, Randy Futrell, and Mike Navetta of PRC Environmental Management, Inc. (PRC).

In conducting the evaluation, PRC assessed the appropriateness of assumptions made by the facility in preparing the Partial Closure Plan and determined whether the Partial Closure Plan satisfied all of the technical requirements of federal regulations promulgated under 40 CFR Part 265 and state regulations promulgated under Ohio Administrative Code (OAC) Chapter 3745. PRC, at the direction of the U.S. Environmental Protection Agency (EPA) Work Assignment Manager (WAM), also evaluated the accuracy of the partial closure cost estimate.

PRC personnel used the following guidance and references to complete the evaluation:

- R.S. MEANS cost estimating manuals.
- "Ohio Environmental Protection Agency Closure Plan Review Guidance," May 1, 1991.
- "RCRA Guidance Manual for Subpart G Closure and Post-Closure Requirements Care Standards and Subpart H Cost Estimating Requirements," January 1987.
- "Guidance Manual: Cost Estimates for Closure and Post-Closure Plans (Subparts G and H)."
- "Consent Decree," Civil Action No. C87-1471, U.S. District Court for the Northeast District of Ohio Eastern Division.
- "Subsurface Investigation Report for Master Metals Incorporated," Compliance Technologies, Inc., January 21, 1991.
- "Environmental Risk Assessment Final Report," Environmental Strategies Corporation, February 15, 1991.

Section 2.0 of this report contains general comments and Section 3.0 of this report contains specific comments pertaining to the technical adequacy of the Master Metals Partial Closure Plan.

2.0 GENERAL COMMENTS

In evaluating the Partial Closure Plan for Master Metals, PRC identified several general issues that affect the overall adequacy of the plan. The general comments presented below are numbered consecutively. Their order of presentation has no relationship to their relative significance.

1. The Partial Closure Plan lacks sufficient detail for a thorough technical evaluation. Examples of insufficient detail are listed below.
 - The scope of the plan should be revised to clearly identify the extent of the partial closure activities.
 - The waste characterizations should be augmented with all information needed to evaluate the risks posed by the wastes and the proposed removal and decontamination procedures for the waste inventory.

- The schedule should be amended to specify all critical dates for the partial closure of each unit, including dates for the following: (1) receipt of final waste volume; (2) waste inventory removal; (3) decontamination of structures and equipment; and (4) inspections by the independent registered engineer.
 - The partial closure procedures should be expanded to address the decontamination of equipment used during the partial closure activities.
 - The sampling and analysis plan should be rewritten to include numbers and locations of all samples to be collected and corresponding analytical parameters and analytical test methods.
 - A quality assurance project plan (QAPjP) covering all sampling and analysis activities should be provided.
 - The cost estimates should be amended to include quantities and unit costs for all activities and service.
2. The facility's strategy for partial closure deviates from that allowed under federal and state regulations. Partial closures of specific waste management units at active facilities must be conducted in full accordance with applicable regulatory requirements. For example, an interim status waste pile subject to partial closure at a facility where several container storage areas will remain active must be clean closed or closed as a landfill in accordance with all applicable provisions of 40 CFR Part 265 Subparts G and L. In this partial closure plan, Master Metals is proposing to merely remove waste inventories from the waste piles and convert the waste piles to container storage units without fully satisfying the requirements of 40 CFR Part 265 Subparts G and L. This proposed process should be replaced with one in which the waste piles are clean closed before operations of the collocated container storage units begin.
 3. The Partial Closure Plan is incomplete. The plan fails to address the following known hazardous waste management units: (1) the battery dump area; (2) the battery case storage area at the southwest corner of the facility; (3) the mixing pile near the old furnace; and (4) areas that were used for bulk load dumping and drum storage areas. The Partial Closure Plan should be revised to include the above units.
 4. The discussion of closure certification does not address the following requirements of 40 CFR Part 265.115: (1) the certification must be submitted to U.S. EPA and Ohio Environmental Protection Agency (OEPA) by registered mail; and (2) documentation supporting the engineer's certification must be furnished to U.S. EPA and OEPA upon request until the facility is released from the financial assurance requirements for closure. The closure certification description should be revised to address these requirements.
 5. The financial assurance mechanism for partial closure required under 40 CFR 265.143 has not been described. The partial closure plan should be amended to describe the financial assurance mechanism.
 6. The partial closure plan does not describe how unauthorized access to the facility will be controlled, how wind dispersal of hazardous wastes will be prevented, and how runoff and runoff controls will be implemented during the partial closure activities, as required by 40 CFR Part 265.253. The partial closure plan should be revised to address facility security, wind dispersal, and runoff and runoff controls during partial closure.

7. The partial closure plan does not mention notations on the property deed and survey plats, as required under 40 CFR Parts 265.116 and 265.119. The plan should be amended to address notations on the deed and survey plats.
8. The partial closure plan does not include or reference a health and safety plan that will be followed to ensure that closure activities comply with Occupational Safety and Health Administration (OSHA) requirements promulgated in 29 CFR 1910. The partial closure plan should be amended to include or reference an acceptable health and safety plan, as recommended in the OEPA closure guidance.
9. Seventeen roll-off boxes at the Master Metals facility containing waste leaded glass, a hazardous waste material, were observed by EPA personnel during a June 16, 1992, walk-through. This partial closure plan does not address the removal of inventory from these roll-off boxes and decontamination of these roll-off boxes. This partial closure plan should be revised to address the 17 roll-off boxes.

3.0 SPECIFIC COMMENTS

1. **Section 2.0** - Section 3.4 of the OEPA Closure Plan Review Guidance states that the partial closure plan should contain a scale drawing of each unit, showing dimensions and construction details, to be closed. This partial closure plan contains no such drawings. The partial closure plan should be amended to include scale drawings as described in Section 3.4 of the OEPA Closure Plan Review Guidance.
2. **Section 2.1, Paragraph 3** - The facility has misinterpreted the intent of a partial closure plan and has, as a result, submitted a partial closure plan that is inconsistent with regulatory requirements. A partial closure, as defined in 40 CFR Part 260, is a closure of a hazardous waste management unit in full accordance with applicable closure and post-closure requirements at a facility that contains other active hazardous waste management units. The Master Metals partial closure plan outlines a process by which waste piles will be converted into container storage units without undergoing complete closure as required under 40 CFR Part 265.258. Specifically, Master Metals plan to defer clean closure of the waste pile structures and underlying soils until such time as the replacement container storage units are closed. To be consistent with 40 CFR Part 265.258 and with EPA guidance on partial closures, the plan must be amended to include clean closure of the collocated container storage units or closure with waste residues in place coupled with post-closure care.
3. **Section 2.2** - The plan should identify the age of each unit subject to the partial closure plan and characterize all wastes that have been stored in each unit.

The waste characterizations presented in this section are incomplete and inadequate to support a technical evaluation of the partial closure plan. The information presented in this plan does not allow the reviewer to assess the migration potential, attenuation characteristic, and risk potential for each waste type. The waste characterizations must be augmented to include information on the free liquids content, particle size distribution, specific gravity, flash point, solubility, color, odor, degradability, volatility, adsorptivity, bioaccumulation, toxicity, kinematic viscosity, and heat value of each waste.

4. **Section 2.3** - Although the wastes have been containerized, the units in which they reside have not been clean closed. Accordingly, the maximum inventories of wastes, total and by waste stream, must be stated for each unit. Moreover, the maximum waste inventories should be revised to include the maximum amount of contaminated soils, as recommended in the EPA guidance.

5. Section 2.4 - The partial closure schedule is open-ended. The schedule must be revised to provide an explicit statement of the closure activities and the total time required to close each unit, as required under 40 CFR 265.112(b)(6).
6. Section 2.4 - Section 3.7 of the OEPA Closure Plan Review Guidance recommends that the facility notify the OEPA District Office at least 5 business days in advance of critical activities, such as soil sampling or removal, so that an OEPA inspector may be present to observe those activities. The schedule for partial closure does not address such notifications to OEPA. The schedule for partial closure should be amended to address notification of the OEPA District Office at least 5 business days in advance of critical partial closure activities.
7. Section 3.0 - The extent of the decontamination program described in this section is unclear. The section should be revised to clearly show the areas to be decontaminated on a facility map. This section should also indicate the following for each unit: (1) the square feet of concrete to be cleaned, (2) all equipment and supplies to be used in the cleaning process, (3) the volumes of liquid and solid wastes to be generated during decontamination of the units, and (4) the reusable cleaning equipment.
8. Section 3.1.1 - The procedure outlined in this section includes a qualitative visual closure performance standard and does not require sampling and analysis to verify effective decontamination. The procedure must be amended to include a quantitative closure performance standard, including cleanup levels and a scheme to verify effective decontamination through sampling and analysis, as required under 40 CFR 265.111(b)(4) and (5).
9. Section 3.1.2, Paragraph 1 - Master Metals is proposing to treat scrapings from this unit in the on-site rotary furnaces. Master Metals has not, however, specified which furnace will be used for this purpose and the procedures that will be followed to ensure that the scrapings meet the waste acceptance criteria of that furnace. In accordance with 40 CFR 265.112(b)(3), Section 3.1.2 must be revised to specify the furnace that will receive the waste and the procedures that Master Metals will use to characterize the waste and ensure that it meets acceptance criteria of the specified furnace.
10. Section 3.1.2, Paragraph 2 - The concrete pads are not curbed or sloped to drains which can be isolated to facilitate the collection and removal of liquids. A visual inspection conducted by EPA on June 16, 1992, revealed that the pads drain to the combined storm and sanitary sewer system. The plan should be revised to describe provisions for collecting wash and rinse waters.
11. Section 3.1.2, Paragraph 3 - Master Metals is proposing the Northeast Ohio Regional Sewer District (NEORS) sewer discharge limits as the rinse water target levels. Although rinse waters meeting the NEORS limits may be acceptable for sewer discharge, there is no logical correlation between the sewer discharge limits and the demonstration of concrete pad cleanliness. The discussion of target levels must be amended to either draw a clear relation between the sewer discharge limits and cleanliness of the concrete pads or to be consistent with the following OEPA rinsate standards:
 1. Fifteen times the public drinking water maximum contaminant level (MCL) for hazardous waste constituents as promulgated in 40 CFR 141.11 and OAC 3745-81-11 for inorganics and 40 CFR 141.12 and OAC 3745-81-12 for organics;

2. If an MCL is not available for a particular contaminant, then fifteen times the maximum contaminant level goal (MCLG) as promulgated in 40 CFR 141.50; or
 3. If the product of fifteen times the MCL or MCLG exceeds 1 mg/L or if neither an MCL nor a MCLG is available for a particular contaminant, then 1 mg/L shall be used as the clean standard.
12. **Section 3.2** - In preparing this partial closure plan, the facility operator assumes that visual inspections will demonstrate that subsurface contamination has not occurred. The preponderance of information collected and reviewed by EPA, however, indicates that subsurface contamination exists. Moreover, during a walk-through of the facility on June 16, 1992, representatives of EPA observed numerous cracks in concrete pads and storage of hazardous waste in roll-off boxes over uncovered soil. Accordingly, the partial closure plan should be revised to include a definitive program for determining the nature and the vertical and horizontal extent of subsurface contamination at the facility.
- Master Metals is proposing an ambiguous program for establishing background soil contamination levels and for sampling soils underlying the units to be closed. The soil sampling program must be completely described in terms of the numbers, locations, and depths of background and underlying soil samples. The plan should include a map showing the relationships of the proposed sampling locations to the units to be closed and to other potential sources of contamination (on-site and off-site). Also, the facility plan should prescribe at least 12 background soil sampling locations, as recommended in Section 3.11.1 of the OEPA Closure Plan Review Guidance.
13. **Section 3.2** - Master Metals is proposing to use background contaminant levels in soils as the basis for closure performance standards for soils. Considering that the area within and around the Master Metals property line has been heavily industrialized for over 100 years, Master Metals should consider using risk-based closure performance standards for soils. Master Metals should also revise the partial closure plan to acknowledge 150 mg/kg as the upper limit for a cleanup standard for lead in soil, as recommended in Section 3.11.7 of the OEPA Closure Plan Review Guidance.
14. **Section 4.0** - The sampling and analysis plan is incomplete in that it does not address the following: the numbers and volumes of sample containers to be filled; sample preservation techniques; field blanks, spikes, and duplicates; specific analytical parameters and methods; acceptable sample holding times; and laboratory data validation and reporting requirements. Also, detailed sample chain-of-custody and shipping procedures are not listed in the plan. The partial closure plan should be revised to include the information listed above.
15. **Section 4.0** - Article IX of the Consent Decree states that U.S. EPA and OEPA have the right to take split samples, that U.S. EPA shall be given 10 days advance notice of sampling, and that Master Metals shall provide U.S. EPA results of all analyses within 15 days after receiving the results from the laboratory. The closure plan does not acknowledge these requirements of the Consent Decree. The closure plan should be revised to expressly address these requirements.
16. **Section 4.1** - The plan does not describe procedures for decontaminating the Teflon bailers between samples. Master Metals must describe the decontamination procedures for the bailers or must specify the use of pre-cleaned disposable bailers only.
17. **Section 4.1, Paragraph 2** - The plan implies that samples will be placed in a cooler and held on site until sampling is complete. However, samples should be shipped in such a

manner as to arrive at the laboratory no later than 48 hours after collection. The partial closure plan should be revised to reflect this.

18. **Section 4.2** - The description of split-spoon sampling is incomplete. The partial closure plan must be revised to include the following information: (1) a description of how boreholes to be sampled will be opened; (2) decontamination procedures for the split-spoon samplers and equipment used to open the boreholes; and (3) the depths to which split-spoons will be driven.
19. **Section 5.0** - The description of the closure certification process does not state that an engineer will have inspected the closed units and will have reviewed all critical supporting documentation, including analytical results. The closure certification description should be modified to include inspections by an engineer and reviews of all critical supporting documentation.
20. **Table 2** - Evaluation of information provided in Table 2 revealed the following 15 deficiencies:
 1. The analytical fees cannot be substantiated without references to analytical laboratory fee schedules or quotations.
 2. No costs are included for shipping samples.
 3. Sampling hardware costs have been omitted.
 4. No costs are included for treatment and/or disposal of contaminated soil.
 5. The partial closure plan states that liquid wastes may be sent to an off-site hazardous waste treatment facility yet the cost estimate only contains costs for discharge to the sanitary sewer. 40 CFR 265.142 (a)(1) states that cost estimates must reflect the highest cost alternative. Since off-site hazardous waste treatment is the more expensive alternative, it should be included in the cost estimate instead of costs for disposal to the sanitary sewer.
 6. Some solid hazardous wastes such as personal protective gear and sampling supplies will be disposed of as hazardous waste. No costs are included for shipping and disposing of these materials.
 7. The cost estimates do not address the decontamination of the scrubber machine.
 8. Costs for containerizing and removing waste inventories have not been identified.
 9. Costs for inspections and certifications by an independent professional engineer have not been identified.
 10. The cost of acquiring drums for wash and rinse water collection has not been itemized.
 11. TCLP analyses routinely cost more than \$120 per sample. The analytical costs appear to be low.
 12. The cost estimate appears to be based on representatives from Master Metals performing the closure. The cost estimate should reflect the costs

for a third party to conduct the closure as stated in 40 CFR 265.142(a)(2). All third party costs associated with execution of the partial closure plan should be included in the cost estimate.

13. The cost estimate for the partial closure is vague and doesn't appear to be current. According to 40 CFR 265.142 (a), "The owner or operator must have a detailed written estimate in current dollars, of the cost of closing the facility. . ." (emphasis added). The following guidance documents should be used in preparing the cost estimates:

- "RCRA Guidance Manual for Subpart G Closure and Post-Closure Care Standards and Subpart H Cost Estimating Requirements," OSWER Policy Directive #9476.00-5, January 1987.
- "Guidance Manual for Subpart G Closure and Post-Closure Plans (Subparts G and H)," Volumes 1-4, OSWER Policy Directive #9476.00-6, November 1986.

The worksheets in OSWER 9476.00-6 should be used as a guide in preparing the cost estimate. These calculations should be attached to the cost estimate as supporting documentation for costs. Also, the estimate should reflect the year on which the costs were based. The estimate should be revised annually to reflect changes due to inflation.

14. Closure cost estimates should be formulated and presented for each hazardous waste management unit.
15. Analytical results from previous soil samples taken at the facility indicate elevated levels of lead in soils underneath and in the vicinity of the units to be closed (CTI, January 1991). No mention is made in the cost estimate of activities that will remediate this contamination. Costs should be included for excavation and treatment or disposal of contaminated soils.

The deficiencies cited above should be addressed in the revised cost estimate.



July 7, 1992

Ms. Sheri Bianchin
U.S. EPA Region 5
RCRA Enforcement Branch
77 West Jackson Boulevard
Chicago, IL 60604

RE: EPA Contract No. 68-W9-0006
Work Assignment No. R05053
Technical Evaluation of Master Metals Closure Plans

Dear Ms. Bianchin:

Enclosed are two paper copies and one diskette copy of the technical evaluations of the partial and final closure plans for the Master Metals facility. In preparing the enclosed comments, PRC referred to guidance prepared by U.S. EPA and Ohio EPA. Ohio-driven comments are identified as such throughout the deliverables.

The closure plan were found to be grossly deficient. The basic partial closure strategy violates requirements for waste piles stipulated in 40 CFR 265.258. The closure strategy does not address documented subsurface contamination. Cost estimates appear to be at least one order of magnitude low.

Please contact me at (312) 856-6700, if you have any questions regarding the technical evaluations.

Sincerely,

A handwritten signature in dark ink, appearing to read "Edward Schuessler", is written over a horizontal line.

Edward Schuessler

cc: F. Norling, RPO (letter only)
D. Leotta, CO (letter only)
E. DiDomenico, (w/1 copy)
R. Van Osten (w/1 copy)
M. Navetta (w/1 copy)
T. Hooper (w/1 copy)
T. Oliver (w/1 copy)
Project File

TECHNICAL COMMENTS
TECHNICAL EVALUATION OF FACILITY CLOSURE PLAN
MASTER METALS INCORPORATED
CLEVELAND, OHIO

Prepared for
U.S. Environmental Protection Agency
Office of Waste Programs Enforcement
Washington, D.C. 20460

Work Assignment No.	:	R05053
EPA Region	:	5
Site No.	:	OHD 097 613 871
Date Prepared	:	July 7, 1992
Prepared by	:	PRC Environmental Management, Inc.
Contract No.	:	68-W9-0006
PRC No.	:	209-R05053
Contractor Project Manager	:	Mike Navetta
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1.0 INTRODUCTION

This document is a report on the technical evaluation of the Facility Closure Plan for Master Metals Incorporated (Master Metals) facility dated April 13, 1992. The technical evaluation was performed by Tracy Hooper, Randy Futrell, and Mike Navetta of PRC Environmental Management, Inc (PRC).

PRC assessed the appropriateness of assumptions made by the facility in preparing the Facility Closure Plan and determined whether the Facility Closure Plan satisfied the technical requirements of federal and state regulations promulgated under 40 CFR Part 265 and Ohio Administrative Code (OAC) Chapter 3745. PRC also evaluated the accuracy of the closure cost estimate.

The following guidance and references were used to complete the technical evaluation:

- R.S. MEANS cost estimating manuals.
- "Ohio Environmental Protection Agency Closure Plan Review Guidance," May 1, 1991.
- "RCRA Guidance Manual for Subpart G Closure and Post Closure Requirements Care Standards and Subpart H Cost Estimating Requirements," January 1987.
- "Guidance Manual: Cost Estimates for Closure and Post-Closure Plans (Subparts G and H)."
- "Consent Decree," Civil Action No. C87-1471, U.S. District Court for the Northeast District of Ohio Eastern Division.
- "Subsurface Investigation Report for Master Metals Incorporated," Compliance Technologies, Inc., January 21, 1991.
- "Environmental Risk Assessment Final Report," Environmental Strategies Corporation, February 15, 1991.
- "Guidance Manual for Management of Investigation Derived Waste During Site Inspections," OSWER Directive 9345.3-02.

Section 2.0 of this report contains general comments and Section 3.0 of this report contains specific comments pertaining to the technical adequacy of the Master Metals Facility Closure Plan.

2.0 GENERAL COMMENTS

In evaluating this closure plan, PRC identified several general issues that affect the overall adequacy of the plan. The general comments presented below are numbered consecutively. The order of presentation has no relationship to their relative significance.

1. In accordance with 40 CFR Part 265.112 (c), the closure plan must be amended whenever: (1) changes in operating plans or facility design affect the closure plan, (2) the expected year of closure changes, or (3) unexpected events during closure activities require a modification of the closure plan. Given the general lack of detail in this closure plan and the relatively large number of assumptions made in its formulation, it is likely that unexpected events will occur and that this closure plan will have to be amended. The closure plan should, therefore, be revised to provide specific instructions pertinent to any required amendments.

2. The financial assurance mechanism for closure has not been described. The closure plan should be amended to describe the financial assurance mechanism.
3. Results of the subsurface investigation performed by Compliance Technologies Incorporated for Master Metals indicate subsurface soil and groundwater contamination by lead and other potential hazardous waste constituents. However, the closure plan does not contain a detailed plan for characterizing and dealing with soil and groundwater contamination. The closure plan should be revised to include a detailed plan for determining the nature and extent of soil and groundwater contamination and a plan for performing corrective actions, or closures with waste-in-place, as appropriate. Since closure with waste-in-place appears to be a viable alternative at this time, the closure plan should be revised to include contingencies for closures with waste-in-place and for subsequent post-closure care.
4. The closure plan does not include provisions for preventing unauthorized access to the facility, preventing wind dispersal of hazardous wastes, and maintaining runoff and runoff controls during the closure activities. The closure plan should be revised to include these missing elements.
5. The closure plan does not mention notations on the property deed and survey plats, as required under 40 CFR Parts 265.116 and 265.119. The plan should be amended to address notations on the deed and survey plats.
6. The closure plan does not include or reference a health and safety plan that will be followed to ensure that closure activities comply with Occupational Safety and Health Administration (OSHA) requirements promulgated in 29 CFR 1910. The closure plan should be amended to include or reference an acceptable health and safety plan.
7. The partial closure plan for the Master Metals facility does not address clean closure of the waste piles and, instead, defers to this closure plan. This closure plan does not address the waste piles. The closure plan should be revised to expressly cover the waste piles described in the partial closure plan.
8. Master Metals is managing hazardous wastes in drums, bins, and roll-off boxes in areas which drain to the combined sewer system. During the June 16, 1992 visit to the facility, EPA representatives observed hazardous wastes and hazardous waste residues on concrete and soil surfaces which drain to the sewer system. It is therefore reasonable to assume that hazardous wastes and/or hazardous waste constituents have entered the sewer system. The closure plan should be revised to provide procedures for characterizing the nature and extent of contamination by hazardous wastes and its constituents in the sewer system and methods for decontaminating the sewer system.

3.0 SPECIFIC COMMENTS

1. Section 2.0 - Section 3.4 of the OEPA Closure Plan Review Guidance states that the closure plan should contain a scale drawing of each unit, showing dimensions and construction details, to be closed. This closure plan contains no such drawings. The closure plan should be amended to include scale drawings as described in Section 3.4 of the OEPA Closure Plan Review Guidance.
2. Section 2.1 - The plan states that the facility has storage, treatment, and generation areas that are subject to closure. However the two rotary furnaces used for thermal treatment of hazardous waste are absent from the itemized list of units to be closed. Since the

furnaces and ancillary equipment are contaminated with hazardous waste residues and constituents, the closure plan should be revised to address the decontamination or disposal of the furnaces and ancillary equipment.

3. Section 2.3 - The waste characterizations presented in this section are inadequate to support a technical evaluation of the closure plan. Data presented in this section does not allow the reviewer to assess the migration potential, attenuation characteristics, and risk potential for each waste type. The closure plan should be amended to include, at a minimum, the following additional information: free liquids content, particle size distribution, bulk density or specific gravity, solubility, flash point, color, odor, degradability, volatility, adsorptivity, bioaccumulation, toxicity, kinematic viscosity, and heat value for each waste.
4. Section 2.3.2 - The physical description of the container storage area lacks sufficient detail to support a technical evaluation of the closure plan. As-built drawings of the concrete pad must be provided. The drawings must show the areal extent and typical cross-sections of the pad. Details of runoff and runoff controls, expansion joints, and water-stops must also be shown to help evaluate the potential for waste migration to surrounding areas and underlying soils. The physical description should also assess the current condition of concrete in terms of stains, cracks, spawled and pitted areas, and other defects that would enhance contaminant migration. The description should be supported with photographs.
5. Section 2.3.3.1 - The descriptions of the air emissions control systems are incomplete. To facilitate the technical evaluation of the proposed closure procedures, the following additional information must be provided: materials of construction for the housings and filter fabrics; dimensions and weights of the units; and shop or as-built drawings of the baghouses.
6. Section 2.3.3.2 - This section states that battery acids, which are hazardous wastes, drain to a 10,000-gallon underground storage tank (UST). Section 4.1 of the closure plan refers to an "underground wastewater tank" and Section 2.2.5 of the closure plan refers to an "underground 7,000-gallon holding tank." However, the closure plan does not address the closure of these USTs. The closure plan should be revised to address the closure of the USTs.
7. Section 2.3.3.2 - The description of the battery cracking area is incomplete. The plan should provide additional design and as-built data, as previously requested for the container storage area (see comment on Section 2.3.2).
8. Section 3 General - Throughout Section 3 of this closure plan, references are made to off-site disposal of hazardous wastes. However, the identities of the off-site disposal facilities have not been provided as required under 40 CFR 265.112(b)(3). Also, some of the waste streams at this facility are subject to land disposal restrictions. The closure plan contains no provisions for complying with requirements of the land disposal restrictions promulgated in 40 CFR Part 268. The closure plan should be revised to identify the off-site disposal facilities to which wastes will be sent and to address the applicable waste analysis, notification, and recordkeeping requirements of 40 CFR Part 268.

There is no mention in the closure plan of the off-site treatment or disposal of contaminated soil. Since the closure activities will require treatment or disposal of contaminated soil, the closure plan should be revised to include this missing information.

9. Section 3.0 - The closure procedures make several references to detergent solutions that will be used for cleaning storage bins and concrete pads. The identity of the detergent is unclear because no chemical or trade names have been provided. As a result, the

suitability of the detergent for its intended purpose cannot be evaluated. The closure procedures should be revised to clearly identify all detergents by chemical or trade name and clearly demonstrate their suitability for removing the facility's waste types from the various surfaces to be cleaned.

10. **Section 3.0, Paragraph B** - The plan states that post-closure care will be performed if the unit cannot be "clean closed." Based on the conditions present at this facility (documented subsurface contamination, waste container storage over uncovered soil, cracked concrete pads, no runoff control, etc. . .), it is likely that "clean closure" may not be obtained at each unit. Therefore, in accordance with 40 CFR 265.197(b) and 265.258(b), the final closure plan should include a post-closure plan and a post-closure cost estimate.
11. **Section 3.1** - The plan states that all baghouse dust will be reclaimed in the rotary furnaces. If so, the furnaces would have to operate without emissions controls during final closure activities. This would clearly violate federal, state, and local air pollution regulations. The closure plan should be revised to include a feasible mechanism for disposing of baghouse dust.
12. **Section 3.1** - The description of inventory removal lacks sufficient detail to support a technical evaluation. The plans should describe the equipment and operating procedures that will be used to (1) remove the inventory from the units and (2) place the inventory in the rotary furnaces. Also, the plan should describe the methods that will be used to ensure that the entire inventory meets the waste acceptance criteria of the rotary furnaces.
13. **Section 3.2, Paragraph 2** - The third sentence states that the pads will be rinsed with tap water. However, the balance of the paragraph deals with containers. This inconsistency should be resolved in the revised closure plan.
14. **Section 3.2** - No mention is made of scrubbing or pressure washing the containers. Given the highly adsorptive nature of the wastes managed at this facility, it is unlikely that the storage bins can be effectively decontaminated without some type of scrubbing or pressure washing. The closure plan should be revised to include some type of scrubbing or pressure washing process for the storage bins.
15. **Section 3.2** - The description of the cleaning process fails to estimate the quantities of hazardous waste liquids, hazardous waste solids, and nonhazardous liquids that will be generated. Furthermore, the closure plan does not address the decontamination of reusable hardware used to clean the bins and the disposal of hardware and supplies that cannot be decontaminated. The closure plan should be revised to include estimated quantities of hazardous and nonhazardous wastes to be generated during cleaning and to address the decontamination and disposal of cleaning equipment and supplies on a per unit basis.
16. **Section 3.2, Paragraph 3** - Master Metals states its intention to use the on-site wastewater treatment plant to treat wash and rinse waters. However, the plan does not describe the procedures that will be followed to ensure that the solutions can be effectively treated by this system. The closure plan should be revised to include the procedures that will be followed to ensure that wash and rinse waters meet the acceptance criteria for the on-site wastewater treatment plant. Alternatively, the on-site plant should not be considered as a treatment option.
17. **Section 3.3** - Visual cleanliness is the closure performance standard for the container storage area pad. Because lead and other hazardous waste constituents cannot always be visually detected when present at regulated levels and because some subsurface contamination resulting from waste migration through cracks in the concrete cannot be visually detected, the closure plan should be revised to include some soil sampling or

other quantitative monitoring or sampling and analysis to confirm effective decontamination.

18. **Section 3.4** - Master Metals is planning to dispose of air emissions control systems as hazardous wastes. To help substantiate the cost estimates, the plan should be revised to include estimated quantities of various hazardous wastes to be disposed of and to indicate which off-site disposal facilities will be used.
19. **Section 3.5** - The sump in the battery decasing area is, as defined in 40 CFR Part 261, an underground storage tank (UST). The plan should be revised to address closure of this sump as an UST in accordance with requirements of 40 CFR Part 265.197.
20. **Section 3.5.1** - The description of the concrete pad lacks the detail previously listed for the container storage area pads (see comments on Section 2.3.2). Design and as-built information should be included in the plan.
21. **Section 3.5.2** - The closure process for the UST is incomplete and should include the following: (1) evaluations of leak tests or inspections of the UST to determine if subsurface releases have occurred, (2) testing of underlying soils to demonstrate clean closure, (3) estimated volumes of wastewater and sludges to be generated during decontamination activities, (4) final disposition of the tank, (5) backfilling and grading of the excavation, and (6) contingencies for dealing with contaminated soils.
22. **Section 3.5.2** - The underground storage tank does not have secondary containment. According to 40 CFR 265.197, a contingent closure plan and a post-closure plan are required. The final plan should be revised to include a contingent closure plan, a post-closure plan and a post-closure cost estimate.
23. **Section 3.6** - The closure performance standard for paved surfaces is visual only. The closure plan should be revised to include some form of quantitative monitoring or sampling and analysis to confirm effective decontamination.
24. **Section 3.7** - Based on observations made by EPA representatives during the June 16, 1992 visit to the facility and on information reviewed to date, it is probable that soils around and underlying the units to be closed are contaminated with lead and hazardous waste constituents. The facility should plan, in advance, to conduct an extensive surface and subsurface soil sampling program. The closure plan should be revised to include, at a minimum, the following: (1) soil sampling locations and depths; (2) methods of soil sampling; (3) decontamination procedures for soil sampling equipment; (4) analytical parameters and test methods for all soil samples; (5) instructions for containerizing, preserving, and shipping samples; (6) a quality assurance project plan (QAPjP) covering the soil sampling program; (7) sample chain-of-custody procedures; and (8) data reduction, validation, analysis, and reporting procedures.
25. **Section 3.7, Paragraph 2** - The plan states that "...WCC will review the findings. ..." The plan needs to define "WCC."
26. **Section 3.7, Paragraph 3** - The description of the background soil sampling program does not state that at least 12 sampling locations will be specified, as recommended in Section 3.11.1 of the OEPA Closure Plan Review Guidance. The closure plan should be revised to prescribe at least 12 background soil sampling locations.
27. **Section 3.7, Paragraph 3** - Section 3.11.7 of the OEPA Closure Plan Review Guidance states that the upper limit for any cleanup standard for lead in soil is 150 mg/kg. This closure plan fails to acknowledge the upper limit. The closure plan should be revised to limit the lead cleanup standard to a maximum of 150 mg/kg.

28. **Section 4.0** - Article IX of the Consent Decree states that U.S. EPA and OEPA have the right to take split samples, that U.S. EPA shall be given 10 days advance notice of sampling, and that Master Metals shall provide U.S. EPA results of all analyses within 15 days after receiving the results from the laboratory. The closure plan does not acknowledge these requirements of the Consent Decree and should be revised to expressly address these requirements.
29. **Section 4.0, Paragraph 1** - The sampling and analysis plan does not expressly apply to the container storage area pad, the air emissions control equipment, the furnaces and ancillary equipment, or the traffic areas. Section 4.0 of the closure plan should be revised to address these units and areas.
30. **Sections 4.1, 4.2, and 4.3** - These sections are incomplete and should include the following: (1) numbers and frequencies of samples to be collected; (2) corresponding analytical parameters, test methods, holding times, and preservation; (3) detailed chain-of-custody and sample packaging procedures; and (5) a QAPjP or reference to a QAPjP covering the sampling program.
31. **Section 4.1, Paragraph 2** - The plan implies that samples will be placed in a cooler and held on site until sampling is complete. However, samples should be shipped in such a manner as to arrive at the laboratory no later than 48 hours after collection. The final closure plan should be revised to reflect this.
32. **Section 4.2, Paragraph 1** - The plan states that soil from the borings will be left on the ground during sampling. This practice is inconsistent with the "Guidance Manual for Management of Investigation Derived Waste During Site Inspections," Oswey Directive 9345.3-02. According to the guidance, the soil must be containerized and managed as hazardous waste. Also, samples must be taken from the drums and analyzed to determine if the soil is non-hazardous. These procedures should be reflected in the closure plan and cost estimate.
33. **Section 4.3** - The analytical parameters and test methods have not been provided. This section of the closure plan should include analytical parameters and test methods for all samples.
34. **Section 5.0** - The closure schedule fails to address key intermediate milestones, especially inspections by a professional engineer and decontamination of the storage bins and concrete pads. The schedule should be revised to address these key intermediate milestones.
35. **Section 5.0** - The closure schedule does not estimate the year of final closure, as required under 40 CFR 265.112(b)(7). The closure schedule should be revised to reflect this.
36. **Section 5.0** - Section 3.7 of the OEPA Closure Plan Review Guidance recommends that the facility notify the OEPA District office at least 5 business days in advance of critical activities, such as soil sampling or removal, so that an OEPA inspector may be present to observe these activities. The schedule for closure does not address such notifications to OEPA. The schedule for closure should be amended to address notification of the OEPA District Office at least 5 business days in advance of critical closure activities.
37. **Section 5.0** - The closure schedule does not show that final closure of each unit will begin within 30 days after each unit receives the known final volume of hazardous waste. The schedule should be revised to address this requirement of 40 CFR Part 265.112 (d) (2).

38. **Section 6.0** - The discussion of closure certification does not address the following requirements of 40 CFR Part 265.115: (1) the certification must be submitted to U.S. EPA and OEPA by registered mail; and (2) documentation supporting the engineer's certification must be furnished to U.S. EPA and OEPA upon request until the facility is released from the financial assurance requirements for closure. The closure certification description should be revised to address these requirements.
39. **Section 6.0** - The description of the closure certification process does not state that a professional engineer will have inspected the closed units and will have reviewed all critical supporting documentation, including analytical results. The closure certification description should be revised to include inspections by the engineer and reviews of all critical supporting documentation.
40. **Table 2** - Evaluation of the information in Table 2 revealed the following 16 deficiencies:
1. Quantities and unit costs have been omitted for the various operations to be performed. Accordingly, the lump sum figures provided in Items A through E and G cannot be independently verified.
 2. No costs are included for shipping samples.
 3. Sampling hardware costs have been omitted.
 4. No costs are provided for the treatment or disposal of contaminated soil.
 5. The final closure plan states that liquid wastes may be sent off-site to a hazardous waste treatment facility, yet the cost estimate contains costs for discharge to the sanitary sewer. Cost estimates must reflect the highest cost alternative as stated in 40 CFR 265.142(a)(1). Since off-site hazardous waste treatment is the more expensive alternative, it should be included in the cost estimate instead of costs for disposal to the sanitary sewer.
 6. The numbers of samples and the analytical parameters have not been provided for Items B and E. As a result, analytical costs cannot be substantiated.
 7. No analytical costs are included for Items A and C, although some analysis will be required to demonstrate effective decontamination.
 8. The cost estimates do not address decontamination of equipment used to remove inventories and to clean the units.
 9. The cost estimates do not address the disposal of solid expendable cleaning and sampling hardware and personal protective equipment.
 10. Costs for inspections and certifications by an independent registered professional engineer have not been identified.
 11. The cost estimates list a line item for EP toxicity, which has been supplanted by TCLP. The unit cost for TCLP also appears to be low.
 12. The \$50,000 transportation line item in Item G has not been attributed to any particular waste stream.
 13. The cost estimate appears to be based on representatives from Master Metals performing the closure. The cost estimate should reflect the costs

for a third party to conduct the closure as stated in 40 CFR 265.142 (a)(2). All third party costs associated with execution of the final closure plan should be included in the cost estimate.

14. The cost estimate for the final closure is vague and doesn't appear to be current. According to 40 CFR 265.142(a), "The owner or operator must have a detailed written estimate in current dollars of the cost of closing the facility. . ." (emphasis added). The following guidance documents should be used in preparing the cost estimates.

- "RCRA Guidance Manual for Subpart G Closure and Post-Closure Care Standards and Subpart H Cost Estimating Requirements," OSWER Policy Directive #9476.00-5, January 1987.
- "Guidance Manual: Cost Estimates for Closure and Post-Closure Plans (Subparts G and H)," Volumes 1-4, OSWER Policy Directive #9476.00-6, November 1986.

The worksheets in OSWER 9476.00-6 should be used as a guide in preparing the cost estimate. These calculations should be attached to the cost estimate as supporting documentation for costs. Also, the estimate should reflect the year on which the costs were based. The estimate should be revised annually to reflect changes due to inflation.

15. Closure cost estimates should be formulated and presented for each hazardous waste management unit.
16. Analytical results from previous soil samples taken at the facility indicate elevated levels of lead throughout the facility (CTI, January 1991). No costs are shown in the cost estimate for remediation activities. Costs should be included for excavation and treatment or disposal of contaminated soils.

The deficiencies cited above should be addressed in a revised cost estimate.

RECEIVED

JUN 30 1992

PRC

June 25, 1992

OFFICE OF
WATER QUALITY DIVISION
U.S. EPA, REGION V

Ms. Sheri Bianchin
U.S. EPA Region 5
RCRA Enforcement Branch
77 West Jackson Boulevard
Chicago, IL 60604

RE: EPA Contract No. 68-W9-0006
Work Assignment No. R05053
Preliminary Comparison of Master Metals RCRA/CERCLA Alternatives

Dear Ms. Bianchin:

As you requested, I have compiled some ideas relative to environmental restoration alternatives for the Master Metals facility. I have tentatively identified four viable action scenarios for responding to soil and ground-water contamination at the Master Metals facility in Cleveland, Ohio. The first scenario is the present course of action--RCRA closure. The second scenario is RCRA corrective action. The third scenario is CERCLA response. The fourth scenario is a combination of RCRA closure and CERCLA response.

To help evaluate the various scenarios, I have prepared the attached matrix, which briefly summarizes some of the advantages and disadvantages of the four alternatives. As the information in the matrix indicates, I believe that RCRA closure is the least attractive alternative to EPA at this time. I also believe that a RCRA corrective action is both appropriate and warranted at this time. These opinions were not distilled with a tremendous knowledge of the socioeconomics of the Master Metals case, however. As a result, my opinions should be tempered with your greater understanding of the Master Metals interdependencies.

The PRC Nashville staff is continuing its work on the closure plan evaluation and the closure cost estimates. Our work should be completed in the next several weeks. I will continue to keep you apprised of our progress. In the interim, please contact me at (615) 256-1191 if you have any questions regarding this correspondence or the work assignment in general.

Sincerely,

Mike Navetta

Mike Navetta
Project Manager

cc: E. Schuessler, PRC
File

PRELIMINARY COMPARISONS OF MASTER METALS RCRA/CERCLA ALTERNATIVES
(Sheet 1 of 2)

Action Scenario	Advantages	Disadvantages
RCRA Closure	<ol style="list-style-type: none"> 1. This is the current course of action. No radical strategy changes are necessary. 2. In terms of cash flow, this scenario allows the financially strapped operator to defer expenditures to the greatest extent. 3. This option can be pursued regardless of what transpires in the permitting process at the facility. 	<ol style="list-style-type: none"> 1. RCRA closures will not occur for many years and, as a result, the response to known subsurface contamination will be protracted. 2. Contamination at Master Metals appears to be widespread. It will be difficult to link subsurface contamination to any particular RCRA unit. 3. Because the facility operates several RCRA units and because the closure process will actually be a series of partial closures, this scenario yields a fragmented, piece-meal approach to remediation.
RCRA Corrective Action	<ol style="list-style-type: none"> 1. This scenario can be readily adapted to the Master Metals situation involving apparently widespread contamination. 2. Relative to RCRA closure, this scenario results in a more rapid restoration of the environment. 3. Information in hand at this time indicates that a corrective action program under 40 CFR 264.100 is appropriate and warranted. 4. This scenario maximizes EPA's control of the clean-up process because it can be implemented as a condition of the facility's permit. 	<ol style="list-style-type: none"> 1. Since EPA usually implements corrective actions as permit conditions, an acceleration of the Master Metals permit would be required. 2. The facility operator would incur negative cash flow impacts in the immediate future.

PRELIMINARY COMPARISONS OF MASTER METALS RCRA/CERCLA ALTERNATIVES
(Sheet 2 of 2)

Action Scenario	Advantages	Disadvantages
CERCLA Response	<ol style="list-style-type: none"> 1. Like RCRA corrective action, CERCLA response is readily adaptable to site-wide contamination. 2. CERCLA response would probably yield a faster clean-up than RCRA closure. 3. The CERCLA process has built-in mechanisms that ensure compliance with other regulatory programs (i.e., RCRA, wastewater pretreatment, local air pollution regulations). 4. CERCLA response can be implemented without linkage to the RCRA permit. 	<ol style="list-style-type: none"> 1. CERCLA responses generally are inconsistent with continued facility operations. 2. CERCLA responses generally are more expensive than RCRA alternatives. 3. Negative cash flow impacts will be instantaneous. 4. The requisite CERCLA community relations activities will increase public pressure to cease Master Metals operations.
Combined RCRA/CERCLA Response	<ol style="list-style-type: none"> 1. This scenario can be adapted to site-wide contamination. 2. This scenario is consistent with continued facility operations. 3. This scenario is being implemented with favorable results elsewhere in Cleveland (NASA Lewis Research Center). 4. Clean-up will be faster than that provided by RCRA closure alone. 	<ol style="list-style-type: none"> 1. Immediate and total costs to the facility operator will be greater than those incurred under RCRA closure or RCRA corrective action. 2. The same public pressures listed in Item 4 above will be realized.

Shari Ed K.
Kevin Paul W.
Stu Linda L.
Don Paul Anderson

Master Metals Conference Call

10-10-91

State does not favor the quadrant closure approach - because of the possibility of overlap of contamination areas. OEPA has been struggling w/ DOE, which wants to use this very approach.

We maintain that we can arbitrarily draw the lines between closure areas; maybe handle g.m. contamination under different mechanism.

MM actively using area requiring closure.

OEPA has just completed 1st TA review

MM has lost its sewer connection for waste battery acid, now accumulating the acid in a UST. OEPA does not have the operating record, to determine if it is a less than 90-day unit or RCRA-regulated. OEPA will look into this determination.

Back to closure issues

Part 285 closure regs are too limited in scope, to provide corrective action. Actual pump-and-treat would have to be under a P-C permit.

We would like to pursue closures first, to remove main sources of contamination.

State begins to agree that h+e are not being benefitted by continued operation of the facility. May want to finally shut them down. State may get an independent contractor to come up w/ a realistic closure cost estimate, for use in court. The \$15,000 estimate from MM seems very inadequate.

I.S. EM would provide a contractor for OEPA. * H+e seem to be further contaminated by screwing around over getting a petty few thousand \$ added to the closure trust funds.

Want to update RFA for MM, for privatization.

Also want to get an updated Superfund ranking for MM. This will tip off MM's legal people as to what we're going to do, but it's getting to the point where the State doesn't care what MM thinks. MM should pretty well know what's coming.

OSHA may even move to close MM.

It's time for us to review all of our allegations against MM and, practically, think why we shouldn't close the facility.

Shift emphasis on case from \$ assurance to continuing operating violations.

MM was alleged to have illegally dumping slag off-site.

Sta feels that we have enough evidence for a criminal case.

DRAFT

Facts

Federal Consent Decree entered on January 15, 1990.

Among other requirements, Master Metals was required:
to submit a partial Closure and a Final Closure plan.

implement and certify that financial assurance was established for partial closure by March 16 1990 for closing units. Full funding was to be achieved by that date. Estimate for closure was \$75,000.

implement and certify that financial assurance is established for final closure by May 15, 1990 for the operating units. A schedule for achieving full funding is acceptable. The first payment in 1990 was to amount to eight years of payments. Then payments could be made annually. Estimate for closure is now \$125,000.

The waste piles have essentially been removed.

Stipulated penalty demand letter sent to company. Final decision is on hold pending funding of the closure plans.

Recent soil and ground water sampling has indicated releases to both the soil and ground water.

Final Part B Permit under review

Issues

Partial Closure-Closure of Closing Units

Master Metals maintains now that since these areas are within the active site areas, fully closing these areas is an activity more appropriately conducted during full facility closure will be fully closed during final closure. In June 1991, Master Metals vowed to submit an amended closure plan for review.

The financial assurance fund for implementing the partial closure plan was supposed to be fully funded. To date only \$15,000 is contained in the fund. The facility is claiming that the removal of the waste piles required by the Consent Decree, and the sampling of the soil and ground water required by the insurance company are funds which have already been expended.

Full Closure- Final Closure of all units

The financial assurance fund for implementing the full closure plan was suppose to be at least \$41,000. As of today only \$26,000 is contained in the fund. Master Metals claims it does not have the liquid funds to do so and is placing \$5,000 per month into the fund until April and then it will out annually.

Questions to be answered

What should and can be done about the partial closure plan regarding actually closing the units (i.e., alternative closure scenario available like closing areas in sequence like quadrants based on "hot spot areas"?)

Amended partial closure plan submitted? What about funding of the plan?

Funds were not expended in accordance with an approved closure plan.

Funding mechanism for the final closure plan is not approvable?

What mechanism will be used to address releases?

Dated 12-27-90

5HR-12

CERTIFIED MAIL: P 659 043 804
RETURN RECEIPT REQUESTED

Mr. Ed Kitchen
Division of Solid and Hazardous
Waste Management
Ohio Environmental Protection Agency
1800 WaterMark Drive
P.O. Box 1049
Columbus, Ohio 43266-1049

RE: Comments on Closure Plans
Master Metals, Inc.
OHD 097 613 871

Dear Mr. Kitchen:

By this letter, the United States Environmental Protection Agency (U.S. EPA) is providing comments, concerns, and recommendations to the Ohio Environmental Protection Agency (OEPA) regarding Master Metal Inc.'s, Partial Closure Plan dated March 16, 1990, and Facility Closure Plan dated May 17, 1990. The Closure Plans were submitted to OEPA, with a copy to the U.S. EPA in accordance with Section V.C.1 of the January 15, 1990, Consent Decree (Case No. 87-1471) between the U.S. EPA and Master Metals Inc. U.S. EPA recommends that the Partial and Final Closure Plans be found deficient for the reasons outlined below:

The Partial Closure Plan is incomplete and must include the following:

- Extension of the boundary of the closing hazardous waste units south of the main office building designated as area 6 in the March 16, 1990 Partial Closure Plan;
- The battery dump area;
- The former battery case storage area at the southwest corner of the facility;
- The mixing pile near the old furnace;
- Any container storage areas not designated in Exhibit B of the Consent Decree;
- Any areas that were used for bulk load dumping;

- Any areas that were used for empty or semi-empty hazardous waste drum storage (i.e., area at southwest portion of the site);
- Any areas that were used for empty or semi-empty hazardous waste drum storage (i.e., area at southwest portion of the site);
- Any visible waste near or on the old furnace; and
- Any container storage area which is or was being used as a waste pile.

These are RCRA regulated units which have lost interim status, or which did not have interim status.

In addition, neither the Partial Closure Plan nor the Final Closure Plan contained a detailed schedule for implementation.

If you have any questions or comments regarding the letter, please contact Sheri L. Bianchin of my staff at (312) 886-4446.

Sincerely yours,

Joseph M. Boyle, Acting Chief
RCRA Enforcement Branch

cc: Mike Savage, OEPA-CO
Paul Anderson, OEPA-NEDO
Mark Bergman, OEPA-NEDO
Michael A. Cyphert, Esq.

bcc: Catherine McCord, REB-12
Barbara Rogers, U.S. DOJ
Arthur Harris, Assistant U.S. Attorney
Stuart Hersh, ORC-TUB-03
Lisa Pierard, RPB-13

5HR-12:BIANCHIN:12/03/90:pb:6-4446

edktn.ltr

AP 12/20/90

SIGNATURE/INITIAL CONCURRENCE REQUESTED - RCRA ENFORCEMENT BRANCH (REB)									
TYP.	AUTH	IL/IN TES CHIEF	MI/WI TES CHIEF	MN/OH TES CHIEF	IL/MI/WI EPS CHIEF	IN/MN/OH EPS CHIEF	REB BRANCH CHIEF	RCRA ASSOC. DIR.	WMD DIVISION DIRECTOR
<i>12/13/90</i> <i>PB</i>	<i>SLB</i> <i>12/13/90</i>			<i>[Signature]</i> <i>12-19-90</i>			<i>[Signature]</i> <i>12/16/90</i>		

Cathy

DEC 27 1990

5HR-12

CERTIFIED MAIL: P 659 043 804
RETURN RECEIPT REQUESTED

Mr. Ed Kitchen
Division of Solid and Hazardous
Waste Management
Ohio Environmental Protection Agency
1800 WaterMark Drive
P.O. Box 1049
Columbus, Ohio 43266-1049

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RCRA Enforcement Branch

cc: Mike Savage, OEPA-CO
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Mark Bergman, OEPA-NEDO
Michael A. Cyphert, Esq.

bcc: Catherine McCord, REB-12✓
Barbara Rogers, U.S. DOJ
Arthur Harris, Assistant U.S. Attorney
Stuart Hersh, ORC-TUB-03
Lisa Pierard, RPB-13

5HR-12:BIANCHIN:12/03/90:pb:6-4446

edktn.1tr

DEC 27 1990

5HR-12

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Mr. Ed Kitchen
Division of Solid and Hazardous
Waste Management
Ohio Environmental Protection Agency
1800 WaterMark Drive
P.O. Box 1049
Columbus, Ohio 43266-1049

*"F" on the closure
report does
not mean final,
but full facility
closure or entire
facility addressed
(all RCRA units)
Lisa*

RE: Comments on Closure Plans
Master Metals, Inc.
OHD 097 613 871

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5HR-12

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Mr. Ed Kitchen
Division of Solid and Hazardous
Waste Management
Ohio Environmental Protection Agency
1800 WaterMark Drive
P.O. Box 1049
Columbus, Ohio 43266-1049

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OHD 097 613 871

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Sincerely yours,

Joseph M. Boyle, Acting Chief
RCRA Enforcement Branch

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Mark Bergman, OEPA-NEDO
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Lisa Pierard, RPB-13

5HR-12:BIANCHIN:12/03/90:pb:6-4446

edktn.1tr

AP 12/24/90

SIGNATURE/INITIAL CONCURRENCE REQUESTED - RCRA ENFORCEMENT BRANCH (REB)									
TYP.	AUTH	IL/IN TES CHIEF	MI/WI TES CHIEF	MN/OH TES CHIEF	IL/MI/WI EPS CHIEF	IN/MN/OH EPS CHIEF	REB BRANCH CHIEF	RCRA ASSOC. DIR.	WMD DIVISION DIRECTOR
4/12/90 PB	SLB 12/12/90			<i>[Signature]</i> 12-19-90			<i>[Signature]</i> 12/18/90		



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149
(614) 644-3020 Fax (614) 644-2329

Richard F. Celeste
Governor

July 30, 1990

Re: Master Metals, Inc.
US EPA ID No.: OHD097613871
Ohio Permit No.: 02-18-0183
Partial Closure Plan

Master Metals, Inc.
Attn: Mr. Douglas Mickey
2850 West Third Street
Cleveland, Ohio 44113

Dear Mr. Mickey:

A public notice acknowledging the Ohio EPA's receipt of a partial closure plan for Master Metals, Inc., Cleveland, Ohio will appear the week of July 30, 1990, in the Plain Dealer, Cleveland, Ohio. The Director of the Ohio EPA will act upon the partial closure plan request following the close of the public comment period, September 4, 1990.

Copies of the partial closure plan will be available for public review at the Cleveland Public Library, 325 Superior Avenue, Cleveland, Ohio 44114 and the Ohio EPA, Northeast District Office, 2110 E. Aurora Road, Twinsburg, Ohio 44087.

I may be contacted at (614) 644-2977, if you have any questions concerning this matter.

Very truly yours,

Thomas E. Crepeau

Thomas E. Crepeau, Manager
Data Management Section
Division of Solid & Hazardous Waste Management

TEC/dhs

cc: Lisa Pierard, U.S. EPA, Region V
Randy Meyer, OEPA, DSHWM, RCRA TAS
Debbie Berg, OEPA, DSHWM, NEDO

2531R(65)

RECEIVED
AUG 2 1990
OFFICE OF RCRA
Waste Management Division
U.S. EPA, REGION V

PUBLIC NOTICE

Cuyahoga County

RECEIPT OF HAZARDOUS WASTE PARTIAL CLOSURE PLAN

For: Master Metals, Inc., 2850 W. Third Street, Cleveland, Ohio 44113, U.S. EPA ID No.: OHD097613871, Ohio Permit No.: 02-18-0133. The Ohio Environmental Protection Agency (Ohio EPA) is hereby giving notice of the receipt of a Hazardous Waste Facility Partial Closure Plan involving Hazardous Waste Piles for the above referenced facility.

Copies of the facility's partial Closure Plan will be available for public review at the Cleveland Public Library, 325 Superior Avenue, Cleveland, Ohio 44114 and the Ohio EPA, Northeast District Office, 2110 E. Aurora Road, Twinsburg, Ohio 44087.

Comments concerning the partial Closure Plan should be submitted before September 4, 1990, to: Ohio EPA, Thomas E. Crepeau, Div. of Solid & Hazardous Waste Mgmt., Data Management Section, P.O. Box 1049, 1800 WaterMark Drive, Columbus, Ohio 43266-0149.



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

RECEIVED

JUN 13 1990

OFFICE OF RCRA
WASTE MANAGEMENT DIVISION
EPA, REGION V



Richard F. Celeste
Governor

June 11, 1990

Re: Master Metals, Inc.
U.S. EPA ID No.: OHD097613871
Ohio Permit No.: 02-18-0133
Closure Plan

full closure
plan rec'd 5-21-90
by OEPA

Master Metals, Inc.
Attn: Mr. Douglas K. Mickey
2850 W. Third Street
Cleveland, Ohio 44113

Dear Mr. Mickey:

A public notice acknowledging the Ohio EPA's receipt of a closure plan for Master Metals, Inc. located at 2850 W. Third Street, Cleveland, Ohio will appear the week of June 11, 1990, in the Plain Dealer, Cleveland, Ohio. The Director of the Ohio EPA will act upon the closure plan request following the close of the public comment period, July 17, 1990.

Copies of the closure plan will be available for public review at the Cleveland Public Library, 325 Superior Avenue, Cleveland, Ohio 44114 and the Ohio EPA, Northeast District Office, 2110 East Aurora Road, Twinsburg, Ohio 44087.

I may be contacted at (614) 644-2977 if you have any questions concerning this matter.

Very truly yours,

Thomas E. Crepeau

Thomas E. Crepeau, Manager
Data Management Section
Division of Solid & Hazardous Waste Management

TEC/dhs

cc: Lisa Pierard, U.S. EPA, Region V
Randy Meyer, Ohio EPA, DSHWM, RCRA TAS
Debbie Berg, Ohio EPA, DSHWM, NEDO

2518R(53)

? submit to U.S. EPA
? whole facility
? is this whole / partial

April permit application

PUBLIC NOTICE

Cuyahoga County

RECEIPT OF HAZARDOUS WASTE CLOSURE PLAN

For: Master Metals, Inc., 2850 W. Third Street, Cleveland, Ohio 44113, U.S. EPA ID No.: OHDO97613871, Ohio Permit No.: 02-18-0133. Pursuant to OAC Rule 3745-66-10 thru 17 and 40 CFR, Subpart G, 265.110 thru 117, the Ohio Environmental Protection Agency (Ohio EPA) is hereby giving notice of the receipt of a Hazardous Waste Facility Closure Plan for Hazardous Waste Management Units for the above referenced facility. Ohio EPA is also giving notice that this facility is subject to a determination concerning corrective action, a requirement under the Hazardous and Solid Waste Amendments of 1984, which concerns any possible uncorrected releases of hazardous waste or hazardous constituents to the environment from any current or previous solid waste management units at the above facility. A corrective action determination is required from hazardous waste facilities intending to close.

Copies of the facility's Closure Plan will be available for public review at the Cleveland Public Library, 325 Superior Avenue, Cleveland, Ohio 44114 and the Ohio EPA, Northeast District Office, 2110 E. Aurora Road, Twinsburg, Ohio 44087. Comments concerning the Closure Plan or factual information concerning any releases of hazardous waste or hazardous waste constituents by the above facility requiring corrective action should be submitted within 30 days of this notice to: Ohio Environmental Protection Agency, Div. of Solid & Hazardous Waste Mgmt., Data Management Section, Attn: Thomas E. Crepeau, Box 1049, Columbus, Ohio 43266-0149.



State of Ohio Environmental Protection Agency

Southeast District Office

2100 E. Aurora Road

Cincinnati, Ohio 45215

6-4446

HR

I/M

FAX Transmittal Sheet

To: Shirley Bionchia

FAX Number: (512) 886-9096

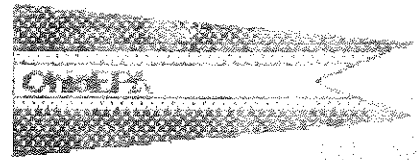
Subject: Master Metals
Phase II Comments

Legend - C

(Include Cover Sheet)

If you have any questions, call
216/487-0769 for sender.

Reference Number: 216/487-0769





State of Ohio Environmental Protection Agency

Northeast District Office

2110 E. Aurora Road
Twinsburg, Ohio 44087-1969
(216) 863-1200 (216) 425-9171
FAX (216) 487-0769

George V. Voinovich
Governor

Ms. Sheri L. Bianchin
Environmental Engineer
US EPA
Region V
Waste Management Division
5HR-12
230 South Dearborn St
Chicago, IL 60604

May 31, 1991

Dear Ms. Bianchin:

Enclosed are the CRAPT comments from the Ohio Environmental Protection Agency concerning Master Metals' Partial Closure Plan. Final comments will be submitted at a later date. This plan addresses the closure of the China Clay Waste Pile Storage Unit, the Rail Dock Storage Unit, four Waste Pile Storage Units, and the former Rock Cracking Unit.

If you have any further questions, please feel free to contact me at (216) 425-9171.

Sincerely,

A handwritten signature in cursive script, reading "Linda G. Lagunza".

Linda G. Lagunza
Environmental Specialist
Division of Solid and
Hazardous Waste Management



I N T E R - O F F I C E C O M M U N I C A T I O N

TO: PAUL VANDERMERE, DSHWM, CO
FROM: LINDA LAGONZAO, DSHWM, NEDO
SUBJECT: MASTER METALS CLOSURE PLAN COMMENTS
DATE: MAY 15, 1991

Enclosed are the closure comments for Master Metals' Partial Closure Plan for the China Clay Waste Pile Storage Unit, the Rail Dock Drum Storage Unit, four Waste Pile Storage Units, and the former Battery Cracking Unit. Since U.S. EPA is interested in the review of the "Closure Cost Estimate" section, I made it a point to review this document with utmost expediency.

If you have any questions, please feel free to call me.

LL/fn

cc: Paul Anderson, DSHWM, NEDO

DRAFT

-1-

1) Section 2.1 General Information

- a. The closure plan must specify all hazardous waste units subject to a hazardous waste permit which will remain unclosed and not covered by the submitted closure plan.
- b. To supplement the map of the facility, provide diagrams or blueprint drawings of the units to be closed, showing dimensions and other construction details, appurtenant structures and relationship to other points or structures on the facility property.

2) Section 2.2 Waste Characterization

- a. Indicate the period of use for each hazardous waste unit. Also identify each unit by referencing the appropriate line numbers on the Part A application.

3) Section 2.3 Maximum Inventory

- a. Estimate the maximum inventory of waste in storage or treatment for each unit, broken down by waste code and standard chemical name, as determined from the facility operating records.

4) Section 2.4 Schedule of Closure

- a. The schedule for closure must be revised to specify all critical dates for closure for each unit. Such dates shall include waste removal, rinsing, sampling, dates when the independent engineer or his/her representative will be present, notification of the Ohio EPA inspector and other relevant activities. The schedule shall start at the point of plan approval by the Ohio EPA Director. The schedule must also indicate that the Ohio EPA inspector responsible for the site will be notified (5) working days prior to the implementation of any critical activity identified in the schedule so that he/she may observe the procedures.
- b. Indicate that the qualified, independent, registered, professional engineer or his representative shall be present during all critical activities during closure.

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-2-

These critical activities may include, but are not necessarily limited to, soil sampling, soil removal, backfilling, final cover placement, etc. The frequency of inspections by the independent engineer must be sufficient to determine the adequacy of each critical activity. Ohio EPA reserves the right to request a copy of the engineer's log book for verification purposes prior to confirming that closure was completed in accordance with the approved closure plan. In those instances where closure is completed prior to approval of the closure plan, Ohio EPA will require that the engineer's log book be submitted prior to confirming that closure was completed in accordance with the plan.

5) **Section 3.3 Closure Procedures**

a. The plan should specify how the owner/operator will minimize or eliminate air emissions related to closure, including nuisance problems such as fugitive dust or odors.

b. Personnel Safety and Fire Prevention Plan:

1. Demonstrate that the health and safety plan to be implemented during closure is consistent with or exceeds the guidelines provided in OSHA's 29 CFR 1910.120, 1910.132, 1910.133(a), 1910.134, 1910.135, 1910.136, 1910.1200, and 1926, USEPA's Occupational Health and Safety Manual, and Chapter 9 of OS EPA's Standard Operating Safety Guides.
2. Clearly indicate in the health and safety plan the personnel levels of protection, such as determined through use of the U.S. Department of Health and Human Services, National Institute for Occupational Safety and Health, "NIOSH Respirator Decision Logic", of May 1987 (or as updated). The independent engineer and the owner/operator monitoring the cleanup for worker exposure must monitor and make a determination as to what level of personal protective equipment must be used.
3. Include a description of the types of environmental monitoring which will be performed to ensure proper protective equipment for the conditions at hand, including monitoring methods to be used to detect hazardous gases, dust or other air emissions during closure activities.

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-3-

4. Clearly reference or include contingency plans to deal with emergencies and accidental exposures.
5. The name and telephone number of the emergency coordinator(s) and local emergency officials to be notified in case of emergency during closure must be included in the contingency plans.
6. Personnel decontamination procedures and methods, and proper disposal or decontamination of equipment used during closure activities must be fully described within the closure plan.

A complete, detailed description of the safety program should not be necessary in a closure plan. However, it is important that the plan cite specific documents, including existing safety plans specific to site operations, and list appropriate items of concern. These items may include monitoring equipment, hazard evaluation, site safety plans, standard operating procedures (SOPs), engineering controls, personal protective clothing and equipment, decontamination and emergency procedures.

- c. Estimate the volume of waste material that will be generated by decontamination efforts. Note that debris derived from listed hazardous waste or exhibiting a characteristic of a hazardous waste must be managed as a hazardous waste.
- d. Provide design details for the equipment decontamination work zones. Information required shall include, but not necessarily limited to, a scale map showing the location of the decontamination areas, (i.e., exclusion, contamination reduction and support zones) materials of construction, liner specifications, and the method of rinseate collection.
- e. Indicate that background samples shall be analyzed using total constituent analysis.
- f. The closure plan should clearly state the status of the hazardous waste management units after closure is completed.

6) Section 3.1 Storage Pad Cleaning

- a. Provide the exact procedures to determine:
 1. If the solids from manual scraping of the concrete pads can be reclaimed in the on-site rotary furnaces.

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- 4 -

2. If rinseates can be treated in the on-site acid neutralization system.

b. Provide documentation of the approved sewer discharge standards for Master Metals.

7) Section 3.2 Soil Sampling

a. All concrete pads associated with the units to be closed shall be inspected for cracks by the independent professional engineer responsible for certifying the closure. If cracks in the concrete pads are discovered during the inspection, the underlying soil must be sampled to determine whether contamination of the soil beneath the concrete pads has occurred. Provide detailed descriptions of soil sampling procedures and analytical test methods to be used in these circumstances.

b. Clearly indicate that background samples will be taken within the same soil type and stratigraphic unit as the comparison samples. Describe the procedures to be used to verify these observations.

c. The number of background samples must be clearly indicated in the closure plan. Twelve soil sampling points shall be selected to represent an area not directly affected by any concentrated waste management or product handling activities, unless it can be shown that the area undergoing closure was equally affected by these activities.

d. The location of background samples must be clearly indicated in the closure plan. Areas to avoid for background sampling include but are not limited to:

1. past waste management areas where solid and/or hazardous wastes or wastewaters may have been placed on the ground, areas of concentrated air pollutant deposition (from a definable localized source), or areas affected by the runoff;
2. roads, roadsides, parking lots, areas surrounding parking lots or other paved areas, railroad tracks or railway areas or other areas affected by their runoff;
3. storm drains or ditches presently or historically receiving industrial or urban runoff;
4. spill areas;

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-5-

5. material handling areas, such as truck or rail car loading areas, or near pipelines;
 6. fill areas; and
 7. other areas as determined by Ohio EPA.
- a. Ohio EPA reserves the right to reject any proposed background sampling location.
 - f. Since this closure plan involves possible soil contamination, Master Metals must determine the full extent of vertical and horizontal soil contamination and contaminant concentrations. The closure plan must explicitly state the intent to define this full extent.
 - g. Include within the sampling plan the number of comparison samples and their locations, including both surface points, depths, and area of visual contamination. The locations of comparison soil samples must be selected to determine the full horizontal and vertical extent of all contaminants specified, and sampling should proceed until this extent is determined. The depths of comparison soil samples in the upper 3-4 feet of soil must occur at one foot increments.
 - h. The soil sampling plan must clearly indicate the equations used to establish the grid representation for the comparison soil samples.
 - i. The sample type (grab or composite) must be clearly indicated in the sampling plan. Compositing of samples should be limited to avoid potential dilution of samples; composites should only be combined from a very small portion of the total area.
 - j. All sampling methods and equipment must be consistent with US EPA's SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition". The closure plan must describe specific sampling methods and equipment to be used during closure.

8) Section 4.0 Sampling and Analysis Plan

- a. Clearly indicate that an independent engineer will certify the decontamination methods to be used and that a minimum amount of residue remains in accordance with Ohio EPA's rinseate standards.

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-6-

- b. The following rinseate standards must be met before the surface of a storage pad or other structure could be considered "clean":
1. Fifteen times the public drinking water maximum contaminant level (MCL) for hazardous waste constituents as promulgated in 40 CFR 141.11 and OAC 3745-81-11 for inorganics and 40 CFR 141.12 and OAC 3745-81-12 for organics;
 2. If an MCL is not available for a particular contaminant, then fifteen times the maximum contaminant level goal (MCLG) as promulgated in 40 CFR 141.50 shall be used as the clean standard; or
 3. If the product of fifteen times the MCL or MCLG exceeds 1 mg/l or if neither an MCL nor an MCLG is available for a particular contaminant, 1 mg/l shall be used as the clean standard.
- c. Reusable equipment (e.g., earth moving equipment and stainless steel soil samplers) may be decontaminated by brushing or scraping debris from the exposed surfaces followed by at least three separate rinses. Although no chemical or physical analysis of the rinseate is required, rinseate must be managed as hazardous waste unless sampling results demonstrate that the rinseate is "non-hazardous". The solid debris shall be managed as solid or hazardous waste or decontaminated soil (meeting risk-based limits discussed below) depending on the wastes in the hazardous waste management unit and the sampling results. Residues and debris generated during closure which are contaminated with wastes specifically listed in OAC Chapter 3745-51 shall be managed as hazardous wastes. In the absence of analytical data, debris is presumed to be hazardous waste. The equipment decontamination operation shall be managed so that vehicles do not distribute contaminated debris outside of the waste management area.
- d. Clearly state that the rinseates containing concentrations of hazardous constituents derived from listed wastes which exceed the rinseate standards lis. in #8 (b) above shall be managed as a listed hazardous waste.

DRAFT

-7-

- e. Soils contaminated with hazardous constituents derived solely from characteristic wastes as defined by OAC Chapter 3745-51 shall be removed and managed as hazardous waste until sampling results and statistical analyses conducted in accordance with the waste characterization procedures described in U.S. EPA Publication SW-846 (Chapter 9) indicate otherwise. Soils contaminated with hazardous constituents above background, which do not exhibit a characteristic of a hazardous waste, shall be removed and managed as a solid waste, unless show to be clean via the risk assessment procedures.
- f. Soils contaminated with listed hazardous wastes for which the basis for listing is heavy metal content (i.e., lead, cadmium, chromium, nickel, mercury, or arsenic) shall be considered hazardous waste when the analysis for total metals exceeds either the concentrations determined as background for total metals or approved risk-based clean-up standards.
- g. If any hazardous constituent, identified in the waste and included in the list of constituents submitted by the owner/operator and approved by Ohio EPA, is found to be nondetectable in the background soils, then the owner/operator is to use the method detection limit for the individual constituent as the clean standard.
- h. For soil areas that may be contaminated with non-naturally occurring hazardous constituents, the soil will be considered to be contaminated if any of these compounds or elements are present above analytical detection limits using methods in U.S. EPA Publication SW-846 "Test Methods for Evaluating Solid Waste: Physical/Chemical Methods." Analytical methods must be referenced to US EPA's SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition" (see 40 CFR 260.11 and OAC 3745-50-11).
- i. Evidence of a quality assurance/quality control plan for laboratory analyses must be provided.
- j. A clear statement of the "clean" level for soil and rinseate must be provided in the closure plan according to comments 8a through 8h above.
- k. Clearly indicate how excavated soil will be stored, loaded and managed once it leaves Master Metals.

DRAFT

1. Soil from sample borings may not be returned to boreholes in the same order in which they were removed. Soil boreholes must be filled with grout or other media approved by Ohio EPA. Soil removed from the boreholes is to be considered hazardous waste and must be managed as a hazardous waste, unless laboratory analyses confirm otherwise.

9) Section 5.0 Closure Certification

- a. All partial closures of hazardous waste management units must be certified by both the owner/operator and a qualified, independent registered professional engineer licensed in Ohio. The closure plan must include a statement acknowledging this requirement. Certifications must be submitted within 60 days of completion of closure. The owner/operator's and independent registered professional engineer's certifications of closure must follow the signature requirements found in OAC 3745-50-42. The owner/operator certification statement must include the information found in OAC 3745-50-42(D).

At a minimum, indicate that the certification document shall include the following information: (1) the certification statement; (2) the approved closure plan or reference to the approved plan; (3) the volume of waste removed or closed in place; (4) all correspondence regarding closure activity after Ohio EPA approval; (5) details of sampling and analysis methods; (6) laboratory data; (7) a narrative describing all activities during closure; (8) post-closure clean-up documentation; and (9) signature of owner/operator and of a qualified, independent, registered, professional engineer.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION V

DATE: 9/30/88
SUBJECT: Telephone call
FROM: George Harper
TO: Bill Mono

Bill confirmed that this facility is properly classified as a facility seeking closure of its land disposal unit (a Waste Pile). It is not a facility seeking a land disposal permit subject to the 11/6/88 deadline. We are pursuing closure of the land disposal unit through a DQJ referral. The closure may take two or three years due to the poor financial status of the company.

The facility is eventually expected to be rehabilitated and to come into compliance with the financial requirements. Therefore, we should put the facility on the universe of facilities seeking storage/treatment permits by 1992.

*Lead Smelter and Refiner**WERTZ
SKOW
BERGMAN*

June 26, 1985

RECEIVED

JUL 1 - 1985

OHIO EPA-N.E.D.O.

Mr. David Wertz Group Leader
Division of Solid & Hazardous Waste
Ohio EPA
2110 E. Aurora Road
Twinsburg, Ohio 44087

Dear Mr. Wertz:

Per our phone conversation on June 25, 1985 I am responding to the questions you raised on the construction of a storage bin for secondary lead flue dust, a closure plan of Master Metals, Inc., and financial responsibility of any waste spills.

- 1) The storage bin construction would be handled through Gateway Construction Company, Euclid, Ohio (486-0224). The principal is Sanford Schroll. The scope of the construction would be to take the present Master Metals Bin D which is currently 27' wide, 47' long, a back wall of 10' high, 12" thick concrete construction, 8' high side walls, 8" thick concrete construction and a minimum of 8" thick concrete floor. We are preparing to increase the sidewall thickness and height to the same as the back wall and place steel sides, roof and door that will reach 16' high.
- 2) The closure plan for Master Metals would consist of Master Metals placing in escrow the money to transport the entire inventory of secondary lead flue dust to one of two secondary lead smelters in neighboring states. We have received permission from both officers of those facilities and are agreeable to this plan. The companies and the officers are:

A) Tonnolli Corporation
Nesquehoning, Pa.
Douglas Bradley, Vice President
416-279-9555

B) Refined Metals Corporation
Beech Grove, Indiana
ID No. IND00718130
Thomas Bingham
317-787-6364

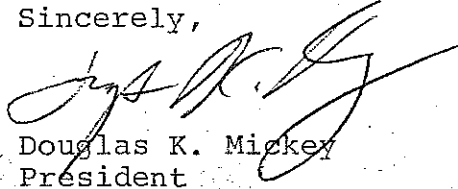
June 26, 1985

We are currently trying to define from Debbie Tegtmeyer of the Columbus office what type of financial responsibility would cover our application. Our insurance sources are working with her on this and as soon as this is defined we hope to adequately provide the coverage that is needed.

I hope that this will satisfy your requirements at this time. Basically I would like to know what your thoughts are regarding a time table or probability of Master Metals being permitted to receive secondary lead flue dust.

I am willing to devote whatever time and attention on my part to reaching this end. I appreciate your assistance and interest and would like to thank you for the prompt attention you and Mr. Carlisle have given us.

Sincerely,



Douglas K. Mickey
President

DKM:kz

cc: Mr. Tom Carlisle
Mr. Tony Sasson.

MASTER METALS

FACILITY INSPECTION 5/5/88 1:30 PM - 4:15 PM

Catherine McCord - U.S. EPA RCRA Enforcement

John VanVranken - U.S. EPA ORC

Barbara Rogers - DOJ

Art Harris - U.S. Attorney

Mr. Mickey - Master Metals

Mike Cyphert - Thompson, etc Attorney for MM

Seda Ergun - Envisage Environmental

Mr. Mickey's summary:

Company submitted a partial closure plan outline last summer to U.S. EPA

status reports have been going to U.S. EPA approximately monthly

August 1986 was Dale Helmer's inspection of facility

facility has been reorganizing D001 S01 area

In October 1987, facility installed new kiln furnace

Gaylord boxes being used to ship waste (cardboard box)

battery plates are being reclaimed

facility buys bulk plates and intact batteries

new battery storage and cracking area is being constructed in front of facility, area was formerly used for battery plates, D008 waste piles

soil samples have been collected in this area down to water table data was not presented to U.S. EPA in last monthly report, MM provided copy during meeting.

new kiln is to help get rid of back log of low grade material at facility, new furnace is 50% larger than first, both furnaces can not be operated at same time due to baghouse limitations and air permit.

battery cracking was temporarily moved to another area of facility

battery plates is the primary source of Pb for operation

no additional low-grade D008 material is being brought to facility, but facility generates low-grade waste

FACILITY WALKTHROUGH FACILITY

- furnaces are rotary kilns
- Schedule 4 PVC pipe is being installed in new battery area for collection of battery acid. Acid to flow to trench drains to underground storage tank that will be installed in old scale pit.
- running or working waste pile is located to south of battery area. company has plans to redo concrete in this area. Waste is being removed from other waste piles and containers and placed in waste pile for storage until loaded in to the furnace.
- some of D008 waste is dross, dross is a by-products of Pb manufacturing
- slag is dumped on ground while hot and then allowed to cool.
- furnace runs 24-hours per day
- dross is generated at facility
- all waste went to waste pile at some time
- southwest corner of facility has been leased for last 3 years, formerly employee parking lot.
- one group of drums 16 rows of 8 drums = 128
- many open and broken and leaking drums, solids and liquids
- D001 ignitables, from Acolac, In UN1993 in drum storage area
- Lennox, E. I. Dupont (texas), MN waste at facility
- Mr. Mickey said that he has never tested battery casings
- some batter casings have been at facility for 10 years
- he is currently feeding battery casings to kiln, for energy not for lead
- pile of zinc dust, he has no use for it
- 28 people work at facility, some part-timers

Matter Metals
Meeting with USEPA

5/4/88

NAME

REPRESENTING

PHONE

Mike Cyphert

ThompsonHerzog Flory (Matter Metals)

216 588-5717

ART HARRIS

U.S. Attorney's Office

(216) 363-3950

BURBANK ROGERS

U.S. Dept. of Justice - DC

(202) 633-4113

CATHERINE MCCORD

U.S. EPA - RCRA Enforcement

(312) 886-4436

JOHN VAN VRANKEN

USEPA - REGIONAL COUNSEL

(312) 886-6721

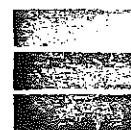
JEDA ERGUN

ENVISAGE ENVIRONMENTAL

(216) 526-0990

$$\begin{array}{l} 2 \times 2 = 4 \\ 2 \times 2 = 4 \\ 4 \times 1 = 1 \\ 1 \times 1 = \end{array}$$

$\sim 80 : 1''$
 ~ 64000
 $\div \times 4 \text{ gal ft}^2$
 $\sim 250,000 \text{ gal}$



**Envisage
Environmental
Incorporated**

P.O. Box 152 Richfield, Ohio 44285
Phone (216) 526-0990

PART B.

11/8/85

N

R.R. SIDING

689'

STORAGE BINS

DRUM & BATTERY STORAGE AREA

DRUM STORAGE

BAG HOUSE

BAGHOUSE

STORAGE BINS

OFFICE

SCALE

STORAGE BIN 25' 69'

STORAGE BIN 20' 69'

STORAGE BIN

IRON BIN

STORAGE BIN

STORAGE BIN 38' 69'

BLAST FURNACE

KETTLES

MASTER METALS INC.

SCALE 1"=50'

736'

FACILITY CLOSURE PLAN
MASTER METALS INC.
CLEVELAND, OHIO 44113

ISSUED 17 MAY 1990
REVISED 13 APRIL 1992

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**FACILITY CLOSURE PLAN
MASTER METALS, INC.
CLEVELAND, OHIO**

1.0 INTRODUCTION

The following itemizes the steps required to implement a full facility closure plan at the Master metals, Inc. plant in Cleveland, Ohio. This plan has been prepared to satisfy the requirements of U.S. Environmental protection Agency(U.S. EPA) regulations 40 CFR Part 265, Subpart G, OAC Rules 3745-66-29, and in accordance with Section V.C.2 of the Department of Justice Consent Decree.

2.0 FACILITY DESCRIPTION

2.1 General Information

Master Metals, Inc., in Cleveland, Ohio is a secondary lead smelting facility. The major operation at the plant consists of reclamation of materials containing lead. Master Metals reclaims lead by using two rotary furnaces. The plant accepts: lead-bearing dross; battery manufacturer's scrap; spent industrial batteries; and various other lead scrap. In addition, Master Metals recycles flue dust and captured baghouse emissions from its furnace operations. The plant has storage, treatment and generation areas that are subject to closure plan requirements of state and federal hazardous

waste laws. A general location of the plant area is provided by Geological Survey topographical map in Figure 1. The plant area is shown in Figure 2. A plot plan of the area detailing the waste management units to be closed is given in Figure 2 and itemized in Table 1.

The hazardous waste management units are used for the following:

- * Storage of lead-bearing feedstock materials (D008, K069 may also contain minor contaminants of D004, D005, D006, D007, D010 & D011)
- * Storage of lead-acid batteries (D008)
- * Storage of emission control dust (K069)
- * Generation of emission control dust (K069)
- * Generation and storage of spent battery acid in the battery braking area (D002)

These units are regulated under the Resource Conservation and Recovery Act (RCRA) and the Ohio Solid and Hazardous Waste Law. All units are contained on a reinforced concrete base.

2.2 Geological Setting

The property is situated on a buried glacial valley that is filled with 200 to 300 feet of sand, silt and clay, overlying shale bedrock. Slag and cinder fill material is deposited to a depth of approximately four feet, with native soils of silty clay found at

five feet below the surface. The water table is at a depth of approximately 10 feet.

Groundwater is not used in the area as a source of drinking water. Drinking water is obtained from Lake Erie and supplied by the City of Cleveland Division of Water.

2.3 Waste Characterization

The following details the hazardous waste management units and the waste material stored, generated or treated at the units. Note that all materials exhibiting characteristic waste code D008 may on occasion exhibit other characteristic waste codes for metals as contaminants such as D004, D005, D006, D007, D010, and D011.

2.3.1 Storage Bins

- * One 90 cubic storage bin, located in the battery breaking area and adjacent to the truck dock, designated bin #1 for storage of lead battery plates and bulk lead-bearing feedstock materials (D008).
- * One 90 cubic yard storage bin, located in the battery lay-down area, abutting the west retaining wall, designated bin #2, for storage of lead battery plates.
- * Two 90 cubic yard storage bins, located directly north of the Smelting and Refining Building, designated bin #3 and #4 for storage of bulk lead-bearing feed-stock materials (D008).

- * One 90 cubic yard storage bin, located adjacent to the rotary furnaces designated bin #6, for storage of in-plant produced dross or bulk lead-bearing feed-stock materials (D008).
- * One 90 cubic yard storage bin, located adjacent to the white metal building, designated bin #7, for storage of bulk lead-bearing feedstock materials (D008).
- * One 90 cubic yard storage bin, located adjacent to bin #7, designated bin number 8, for storage of bulk lead-bearing feedstock materials (D008).
- * One 90 cubic storage bin, located adjacent to bin #4 used as the process charge bin, and contains D008, K069.
- * Three 40 cubic yard storage bins, adjacent to bin #9 designated as bins #15, #16, and #17 for storage of china clay and lead dross previously contained in waste piles (D008).
- * Two one hundred and eighty (180) cubic yard storage bins, designated bin #'s 10 and 11, for storage of lead-bearing feedstock material (D008) and on occasion bulk flue dust material (K069) from in-plant, generated baghouse emission dust.
- * One 90 cubic yard storage bin, located at the rear of the shipping and receiving building, designated bin #9, for storage of bulk lead-bearing feedstock (D008).
- * One 90 cubic yard slag bin located next to the furnace convective coolers (may on occasion be D008).
- * One 50 cubic yard storage bin for receiving and storage of lead-bearing feedstock material (D008)

2.3.2 Container Storage Area

The container storage area is located at the southwest corner of the facility and consists of an eight-inch reinforced concrete base approximately 75,000 square feet in size. The area stores lead-bearing feed-stock materials (D008-K069), primarily in 55-gallon drums, as well as containers of various other sizes.

2.3.3 Generation Areas

2.3.3.1 Air Emissions

Lead bearing air emissions are generated from the operation of two rotary furnaces. Four fabric filter baghouses control primary and secondary emissions from the furnaces. Emission control dust (K069) is periodically shaken from the filters and placed in super sack containers. All emission control dust is recycled on site.

2.3.3.2 Battery Cracking Area

Lead battery cells are removed from industrial batteries in the battery breaking area. Battery acid waste waters (D020) are gravity fed to a 10,000 gallon underground holding tank. Currently liquid from the holding tank is removed by a licensed firm for off-site treatment.

2.4 Maximum Inventory

Master Metals stores, at any one time: 3300 tons of lead-bearing feedstock materials, 20 tons of lead-acid industrial batteries. Spent acid from the battery cracking operation is generated at a rate of 2,000 or less gallons per month. The maximum volume of acid stored is 10,000 gallons. Master Metals will use its inventory tracking procedure contained in Section C2 "Waste Analysis Plan" of the Part B permit application to determine wastes managed at given units and will be compared with the Part A application.

3.0 CLOSURE PROCEDURES

Master Metals will meet the general closure performances standard of U.S. EPA regulations at OAC 37450-66-11. The general closure performance standard is quoted below:

The owner or operator shall close his facility in a manner that:

- (A) Minimizes the need for further maintenance; and
- (B) Controls, minimizes, or eliminates to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition

products to the ground water or surface waters or to the atmosphere.

Master Meals intends to complete a "clean closure" of the facility. The requirements for a clean closure are stated in U.S. EPA regulations at 40 CFR 265.258 and in Ohio EPA regulations at OAC 3745-67-58. The Ohio regulation is presented below:

- A. At a closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, structures and equipment contaminated with waste leachate, and manage them as hazardous waste, unless paragraph (D) of rule 3745-51-03 of the Administrative Code applies; or
- B. If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in paragraph (A) of this rule, the owner or operator finds that not all contaminated subsoils can be practically removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to

landfills (rule 3745-68-10 of the Administrative Code).

A qualified independent registered, professional engineer or his representative will be present during all critical activities during closure.

3.1 Inventory Removal

At the initiation of closure, all remaining inventory of lead-bearing scrap, dross and bag house dust will be systematically reclaimed on site in the rotary furnaces.

3.2 Storage Bin Cleaning

The 90 cubic yard and 180 cubic yard storage bins will first be scraped manually using shovels to remove accumulated solids. The solids will be drummed and managed as hazardous waste.

The containers will then be washed with a detergent solution. The wash water will be vacuumed into a drum or drums for sampling and disposal purposes. The pads will then be rinsed with tap water. The rinse water will be containerized, sampled and analyzed. If analysis of the rinse water indicates contamination, the procedure will be repeated until target levels are reached in the rinse water. The

target levels will be:

- * Fifteen times the public drinking water Maximum Contaminant Levels (MCL's) for lead as promulgated in 40 CFR 141.11 and OAC 7345-81-11.
- * Analysis will be performed for total constituent concentration.
- * An independent engineer will certify the decontamination methods to be used. A minimum amount of residue will remain in accordance with Ohio EPA's rinse standards.

When target levels are achieved, the containers will be considered clean. Containerized water, which includes waters from cleaning, rinsing, equipment cleaning, and personnel decontamination, with hazardous water constituent concentrations greater than target levels will be sent Master Metals' on-site wastewater treatment system if in operation or will be sent off-site for treatment by a licensed hazardous waste treatment facility. Waters that meet the sewer discharge standard will be discharged to the sewer. Sludges remaining from the treatment operation will be handled as hazardous waste and recycled in Master Metals' rotary furnaces.

3.3 Container Storage Area Cleaning

The concrete pad in the container storage area will be cleaned of all spillage and residue using a combination industrial sweeper and vacuum system. Visible residue that cannot be removed with the

sweeper/vacuum will be cleaned by washing with an industrial detergent and rinsing with tap water. The sweepings will be managed as hazardous waste. When the concrete pad is visually clean, it will be considered closed.

3.4 Air Emissions Control Equipment

Components of the air emissions control equipment (i.e., bag houses) come into contact with lead-bearing emissions dust while in service. These parts include: hooding; duct-work; dirty air plenums; hoppers; screw conveyors; fans; and filter bags.

Internal areas of the bag houses structures will be visually inspected. Gross deposition of dust will be manually removed and drummed. Further cleaning will be provided by an industrial vacuum system until all parts of the control equipment are visually clean. Since the rotary furnaces will no longer be in operation during the cleaning of the bag houses, all residues will be disposed off site as hazardous waste.

The filter bags will be removed from the bag houses and also disposed off-site as hazardous waste.

3.5 Battery Cracking Area

3.5.1 Concrete Pad Cleaning

The pad will be washed with a detergent solution using a scrubber machine. The pad will then be rinsed with tap water. A sample of the rinse water will be analyzed. If analysis of the rinse water indicates contamination, rinsing of the pad will be repeated until target levels are reached in rinse water. The target levels will be:

- * Fifteen times the public drinking water MCL's for lead, as promulgated in 40 CFR 141.1 and OAC 7345-81-11.
- * Analysis will be performed for total constituent concentration.
- * Property of non-corrosiveness (pH greater than 2 less than 12.5).

When target levels are achieved, the pad will be considered clean. Wash waters and rinse waters will be sent to Master Metals' on-site wastewater treatment system if in operation or will be sent off-site for treatment by a licensed hazardous waste treatment facility.

3.5.2 Underground Wastewater Holding Tank

The 10,000 gallon underground wastewater tank will be removed. If prior to removal, liquids in the tank will be pumped to the

wastewater treatment system if in operation or will be sent off-site for treatment by a licensed hazardous waste treatment facility. The remaining solids and residues will be vacuumed into drums and handled as hazardous waste. The tank will then be rinsed with tap water. A sample of this rinse water will be analyzed. If analysis of the rinse water indicates contamination, rinsing of the tank will be repeated until target levels are reached in the rinse water. The target levels are detailed in Section 3.5.1.

When the target levels are achieved, the tank will be considered clean, and removal of the tank will proceed. Rinse waters will be sent to Master Metals' on-site wastewater treatment system.

3.6 Traffic Areas

Concrete-paved surface areas in the main plant area of the facility (i.e., the south of the parking lot), to include the lead smelting and refining building, will be cleaned of visible residue using an industrial sweeper vacuum. All residues will be considered hazardous waste and handled accordingly.

3.7 Soil Sampling

A visual inspection will be conducted of the concrete-paved storage and generation areas. If the visual inspection reveals extensive cracking or deterioration of the subsoil. Also, soils in

unpaved areas will be tested if they are found to be stained or discolored. In addition, if a visual inspection indicates that leaking has occurred from the underground wastewater holding tank, soil samples will be collected in the vicinity of the tank. Soil samples will be collected where visibly contaminated soil is present.

Soil beneath deteriorated concrete pads or areas of stained soil will be evaluated for contamination by collecting soil samples at various depths and comparing the results to background samples. Each potentially contaminated area will be divided into a square grid pattern. Samples will be taken at the center of each interval. It is estimated that a maximum of four core samples at each suspect area will be sufficient to determine the extent of any contamination. Following the visual inspection, WCC will review the findings with the Ohio EPA and U.S. EPA to determine the need for sampling and locations where soil samples may be required.

According to the Ohio EPA "Closure Plan Review Guidance" dated February 8, 1988, specific standards must be met in all applicable closure plans to determine clean levels for soils. Master Metals will determine "clean" levels for soil by using alternate A, which states that "soils in the area of the hazardous waste management unit shall be considered to be contaminated if concentrations in the soil exceed the mean of the background samples plus two standard

deviations." All metals analyses will be for total metals. Soils will be analyzed for TCLP at one location at each sampling area. Soil will be tested for corrosiveness in the battery cracking and in the area of the underground tank, if visual inspection indicates leaking may have contaminated the soil.

If soil sampling is required, background locations will be determined prior to the initiation of any sampling. Background samples will be collected at locations off site. The background samples will be from the same soil horizon as the soil at the areas where contamination is suspected. Exact locations will be discussed with U.S. EPA and Ohio EPA prior to sampling.

Soil samples will be taken continuously with a split-barrel sampler. Soil within the following intervals will be retained for laboratory analysis; 0-6 inches below the surface; 2-2.5 feet into fill material; 0-6 inches below the interface of fill material and native soil; and 2-2.5 feet into native soil. Selected samples will be analyzed to measure the depth that metals may have penetrated.

The level of metals in soil samples from a particular depth at each sampling location in each unit will be compared to background using statistical methods as specified by Ohio EPA's "Closure Plan Review Guidance." Soils that are statistically different from

background samples will be considered contaminated.

Please note that preliminary extensive soil and ground water sampling has been conducted at Master Metals' property in December of 1990.

4.0 SAMPLING AND ANALYSIS PLAN

This plan documents the procedures that will be followed by sampling team personnel. Included in the Sampling and Analysis Plan (SAP) are descriptions of sample collection and sample handling techniques. Samples obtained during closure will consist of wash water and rinse water from the storage bins, wash water and rinse water from the battery cracking area, and soil samples, if required.

Field sampling will be performed by Master Metals or its designate consultant. A Sampling Team Leader (STL) will be responsible for all field sampling activities. The STL will be responsible for the availability and maintenance of sampling equipment and materials, for sample shipping and packing materials, for completion of all chain-of-custody records, and for proper handling and shipping samples. The STL will also be responsible for obtaining proper sample containers from the laboratory. Records of field activities will be compiled and forwarded to Master Metals. Sampling team members, under STL's direction, will perform field

measurements, sample collection and shipping, and equipment cleaning as required.

4.1 Storage Bin, Concrete Pad and Underground Storage Tank Cleaning and Rinse Water Sampling.

The Storage bins, concrete pad in the battery cracking area and underground wastewater tank will be cleaned using a detergent wash followed by a high-pressure rinse with tap water. The rinse water will be vacuumed into clean drums for storage. An analysis of the wash water, rinse water and tap water will be performed to verify that the units are clean. If analyses indicate excessive concentrations of contaminants in the rinse water (based on criteria described in previous Sections 3.2 and 3.5.1), the procedure will be repeated until acceptable levels are obtained. The tap water used for preparing the detergent solution and for rinsing will also be analyzed to establish background water quality.

Samples of wash water and rinse water will be collected from using a bottom-entry/discharge Teflon bailer. Tap water will be drawn directly from the source. Samples will be discharged directly into pre-cleaned glass vials. The vial will then be placed into an iced shipping container to await transport to the analytical laboratory. Upon completion of sampling, the samples will be

delivered to the analytical laboratory either directly or by means of overnight courier. Chain-of-study protocols will be maintained.

The sample vials will be supplied and prepared by the analytical laboratory. Containers for inorganic compound analyses will be pre-preserved as appropriate for the specific compounds. Each sample container will be labeled, using ink, noting the following:

- * sample I.D. number
- * date and time of sampling
- * names of sampling personnel
- * analyses required
- * preservatives used
- * unusual conditions (e.g. - contains detergent)

The sample I.D. numbers will be unique to each sample source.

All information on sample labels will be replicated in a field book. All drums/containers will be marked with the corresponding sample I.D. number.

Samples of rinse water and tap water will be collected during cleaning operations. Samples of wash water will be collected after all cleaning is completed (including equipment).

4.2 Soil Sampling

Core samples will be obtained with a split-barrel sampler in general accordance with ASTM D-1586. Soil samples will be obtained continuously, at 2-foot intervals, at locations and levels described in Section 3.2. A representative portion from each designated level will be placed in a laboratory-prepared sample container for analysis. Any remaining soil will be left on the ground surface. The bore hole will be grouted to the surface. Samples will be transferred to the laboratory in iced, insulated shipping containers under chain-of-study protocols.

If the number and locations of soil samples is not sufficient to define the extent of soil contamination in the area, a revised soil sampling and remediation plan will be prepared and submitted to the Ohio EPA within 15 days of such determination. In general, soil samples will continue to be collected in a uniform manner as necessary to define the extent of any contamination.

All sampling equipment will be decontaminated before use and between sample locations. All equipment will be decontaminated prior to removal from the site.

4.3 Analytical Methods

Analyses will be conducted in accordance with methods outlined in U.S. EPA Publication SW-846.

5.0 CLOSURE SCHEDULE

Master Metals, Inc. will close the facility according to the following schedule:

- * Submit notification of final closure.
- * Begin closure within 45 days of notification.
- * Conduct on-site reclamation of all hazardous waste inventory within 90 days of closure commencement.
- * Decontaminate units and remove underground tank within 180 days of closure commencement.
- * Closure certification within 60 days of final closure.

6.0 CLOSURE CERTIFICATION

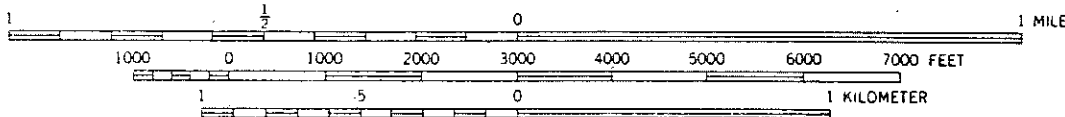
When closure is complete, Master Metals will submit to both U.S. EPA and Ohio EPA an operator's certification as well as certification by an independent Registered Professional Engineer that the hazardous waste units have been closed in accordance with the approved Facility Closure Plan.

7.0 CLOSURE COST ESTIMATE

The costs to carry out this closure plan are presented in the attached Table 2.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY
CLEVELAND SOUTH, OHIO

41081-D6-TF-024



CONTOUR INTERVAL 10 FEET

GENERAL LOCATION MAP
MASTER METALS - CLEVELAND, OHIO

DRAWN BY: CGS

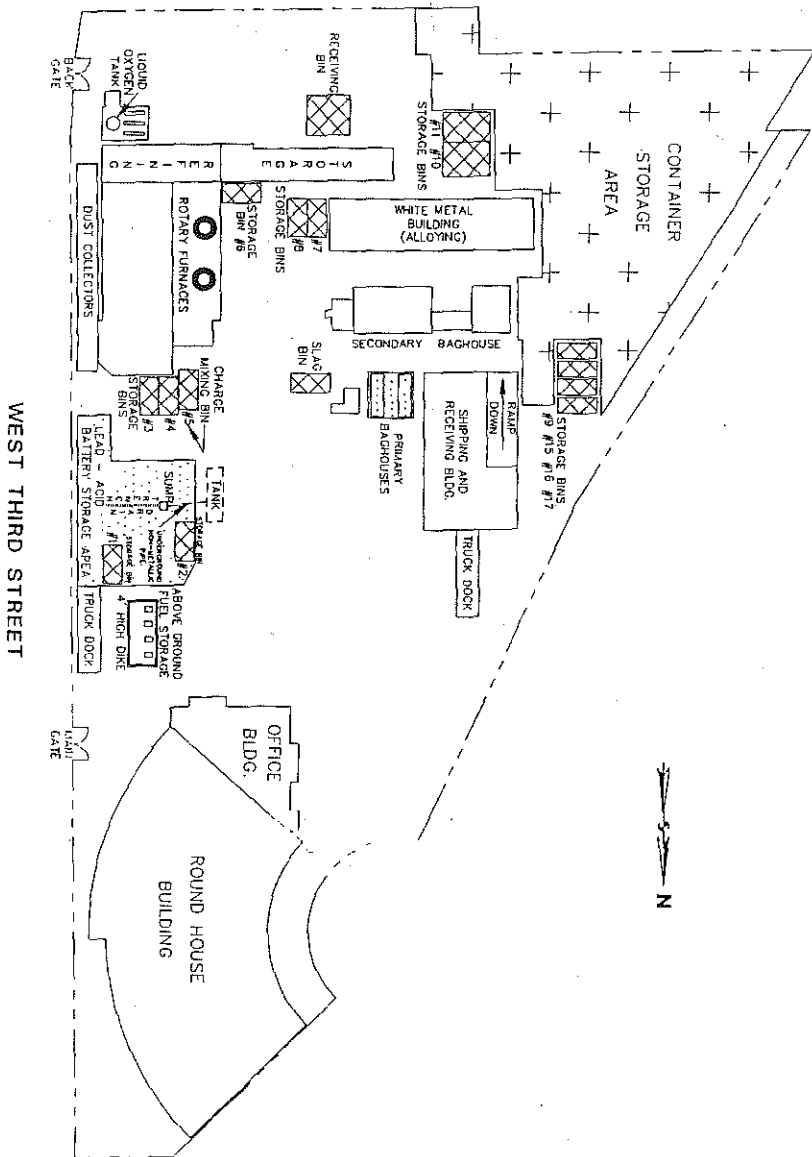
CHECKED BY: RAZ

PROJECT NO: 88C6174

DATE: 3-9-90

FIGURE NO: 1

Figure 2



KEY

- * BULK STORAGE BIN
PROCESS CODE S01
PART A LINE NUMBER 1
- * CONTAINER STORAGE AREA
PROCESS CODE S01
PART A LINE NUMBER 2
- ** LEAD ACID BATTERY CRACKING
AND STORAGE AREA
PROCESS CODE S01
PART A LINE NUMBER 3
- ** UNDERGROUND ACID STORAGE TANK
PROCESS CODE S02
PART A LINE NUMBER 4
- * ROTARY FURNACES
LEAD RECLAMATION
PROCESS CODE T04
PART A LINE NUMBER 5

* DD04, DD05, DD06, DD07,
DD08, DD10, DD11, K059
** DD02

DO NOT SCALE
FROM 8-1/2 X 11
PAPER SIZE DRAWING

1" = 80'

Haydon, Inc.

The information in this Drawing has not been verified by a field survey. This Drawing was generated from information provided to Haydon, Inc. by the Client.

DATE REV'D BY CHK'D BY

S. PLAN 0



2800 May 10th Street
Cleveland OH 44112
Tel: (216) 227-2525

TABLE 1
WASTE MANAGEMENT UNITS SUBJECT TO CLOSURE
MASTER METALS, INC.
CLEVELAND, OHIO

Description	RCRA Waste Code	Approximate Dimension
Storage Bins		
Bin #1	D008 *	90 cu. yd.
Bin #2	D008 *	90 cu. yd.
Bin #3	D008 *	90 cu. yd.
Bin #4	D008 *	90 cu. yd.
Bin #5	D008, K069 *	90 cu. yd.
Bin #6	D008 *	90 cu. yd.
Bin #7	D008 *	90 cu. yd.
Bin #8	D008 *	90 cu. yd.
Bin #9	D008 *	90 cu. yd.
Bin #10	D008, K069	180 cu. yd.
Bin #11	D008, K069	180 cu. yd.
Bin #15	D008	40 cu. yd.
Bin #16	D008	40 cu. yd.
Bin #17	D008	40 cu. yd.
Receiving Bin	D008 *	50 cu. yd.
Container Storage Area	D008 & K069	75,000 sq.ft.
Emission Dust Generation		
Baghouse "A"	K069	-----
Baghouse "B"	K069	-----
New Baghouses (2)	K069	-----
Battery Cracking Area	D008 & D002	7,000 sq. ft.

cu. yd. = cubic yards

sq. ft. = square feet

* = may also contain characteristic waste codes D004, D005, D006
D007, D010 and D011

TABLE 2

FACILITY CLOSURE COSTS
MASTER METALS, INC.
CLEVELAND, OHIO

<u>A. Storage Bin Cleaning</u>			
Residue removal			
(labor and materials)	\$ 3840.00		\$ 3840.00
 <u>B. Cleaning of Concrete Pad in Battery Cracking Area</u>			
Residue removal, cleaning			
and surface rinsing			
(labor and materials)	\$ 5250.00		
Analytical Fees	420.00		
Liquid Waste Disposal			
sanitary sewer \$0.03/0.04/gal.	400.00		
		\$	6070.00
 <u>C. Drum Storage Area and Paved Surface Area Cleaning</u>			
Sweep/vacuum concrete			
(labor and materials)	\$ 3900.00		
Residue disposal			
(transportation costs to			
reclaiming facility)	3000.00		
		\$	6900.00
 <u>D. Cleaning of Air Pollution Control Equipment</u>			
Residue removal and cleaning			
(labor and materials)	\$ 5550.00		
Residue and filter bag disposal	2500.00		
		\$	8050.00
 <u>E. Underground Tank Removal</u>			
Residue removal, cleaning, and			
and rinsing	\$ 1500.00		
Residue disposal	6250.00		
Analytical fees (tank cleaning)	420.00		
Tank removal	2000.00		
		\$	10170.00

TABLE 2

FACILITY CLOSURE COSTS
MASTER METALS, INC.
CLEVELAND, OHIOF. Soil Testing

*Soil Sampling

Mobilization/demobilization	\$ 1500.00	
Soil borings @ \$14/LF	6160.00	
Split-spoon samples @ \$10 ea.	1760.00	
Decontamination	500.00	
Materials	<u>500.00</u>	\$ 10420.00

**Soil Analysis

Total metals @ \$140/sample	\$ 19880.00	
EP Toxicity @ \$120.00/sample	1320.00	
Corrosivity @ \$15/sample	<u>300.00</u>	\$ 21500.00

G. Inventory Removal

Transportation costs	\$ 50000.00	
Labor	<u>4800.00</u>	\$ 54800.00

TOTAL	<u>121750.00</u>
-------	------------------

* Soil sampling costs are based on a maximum of four core samples taken at each of 10 paved or unpaved areas of the facility, plus four background core samples.

** Soil analysis costs include costs for analysis of soils at the underground tank.

PARTIAL CLOSURE PLAN
MASTER METALS INC.
CLEVELAND, OHIO 44113

ISUUED 16 MARCH 1990
REVISED 13 APRIL 1992

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**PARTIAL CLOSURE PLAN
FORMER HAZARDOUS WASTE MANAGEMENT UNITS
MASTER METALS, INC.
CLEVELAND, OHIO**

1.0 INTRODUCTION

The following plan itemizes the steps required for closure of former hazardous waste management units at the Master Metals, Inc., Cleveland, Ohio plant. This plan has been prepared to satisfy the requirements of USEPA regulations 40 CFR Part 265, Subpart G, OAC Rules 3745-66-10 through 3745-66-20, and in accordance with Section V.C.1 of the Department of Justice Consent Decree.

2.0 FACILITY DESCRIPTION

2.1 General Information

Master Metals, Inc., in Cleveland, Ohio, is a secondary lead smelting facility. The major operation at the plant consists of reclamation of materials containing lead. Master Metals reclaims lead by using two rotary furnaces. The plant accepts: lead-bearing dross; battery manufacturer's scrap; spent industrial batteries; and various other lead scrap. In addition, Master Metals recycles flue dust and captured baghouse emissions from its furnace operations. The plant has storage areas that are subject to closure plan requirements of state and federal hazardous waste laws. A general location of the plant area is provided by Geological Survey topographical map in Figure 1. The plant area is shown in Figure 2. Eight hazardous waste units are required to close in accordance with an approved closure plan. A plot plan of the area detailing the former waste management units to be closed is given in Figure 2 and itemized in Table 1.

The former hazardous waste management units were used to store waste piles of lead-bearing dross, china clay, and to store lead-containing plates from spent industrial batteries. These units are regulated under the Resource Conservation and Recovery Act (RCRA) and the Ohio Solid and Hazardous Waste Law. The waste piles meet the definition of a characteristic waste for lead (D008) using TCLP leachate testing. All units are equipped with 8-inch reinforced concrete pads.

Since these areas are and will continue to be a significant part of the facility and operations are dependent on use of these areas subject to closure, a "clean" closure of these areas are activities more appropriately conducted during full facility closure.

Therefore, Master Metals believes that removal and containerization of the materials is sufficient to complete partial closure of these units.

However, Master Metals Inc. will conduct additional closure of these units in accordance with the following plan if required.

2.2 Waste Characterization

The following details the hazardous waste management units to be closed and the waste materials that have been, stored at the units.

2.2.1 China Clay Waste Pile Storage Unit (Area #1)

This hazardous waste management unit occupies approximately 7,000 square feet of area abutting the southwest property line. The unit stored china clay waste, a lead-bearing material (waste code D008). The china clay waste piles have been containerized and are being reclaimed in the plant's rotary furnaces.

2.2.2 Rail Dock Drum Storage Unit (Area #2)

Materials having the hazardous waste characteristics of ignitability (D001), corrosivity (D002), reactivity (D003), chromium (D007), lead (D008), and generic waste (F001), were stored on approximately 450 square feet of the rail dock area. The material was stored on a short term basis and no known spills or leakage occurred during that time. The area is on a concrete pad that is currently being used for storage of containerized lead-bearing waste. The material was never processed by Master Metals and subsequently manifested and removed from the site by GSX Chemical Services of Ohio in May 1988. Master Metals will close the unit for the above noted waste codes.

2.2.3 Waste Pile Storage Unit (Area #3)

The 3900-sq.ft. storage unit is located south of the PTR Building and has in the past been used for storage of lead-bearing materials (waste code D008).

2.2.4 Waste Pile Storage Unit (Area #4)

Waste piles of lead-bearing dross (waste code D008) were stored in this 4500-sq. ft. unit, which is located directly north of the reveratory and smelter buildings. In 1989, Master Metals installed three 90 cubic yard steel containers for storage of dross material. The containers are covered with a tarpaulin for weather protection.

2.2.5. Waste Pile Storage Unit (Area #5)

Storage Area #5 is located directly south of the tank farm and is approximately 7,000 square feet in area. Formerly the area stored waste piles of dross (waste code D008) and was used for reclaiming lead-containing cells from spent industrial batteries. Currently, the area stores batteries on pallets and continues to be used for the reclamation operation (battery breaking).

Spent sulfuric acid is directed to a trench drain and is gravity fed to an underground 7,000 gallon holding tank.

Two 90 cubic yard steel storage containers have been installed in this area to store battery plates and additional lead-bearing feedstock material.

2.2.6 Waste Pile Storage Unit (Area #6)

This hazardous waste management unit is located directly east of the Transformer Room. It is approximately 2000 square feet in area. The unit stored piles of dross (waste code D008) on a concrete base in the past, but is currently storing slag byproduct from its smelting operation in a 90 cubic yard storage container.

2.2.7 Former Battery Cracking Area (Area #7)

This unit was used for battery reclamation operations and storage of lead battery plates (waste code D008). The unit is approximately 750 square feet in area and is located at the rear of the plant adjacent to the container storage area.

2.2.8 Waste Pile Storage Unit (Area #8)

This unit stored piles of old battery casings. It is approximately 1500 square feet in area.

2.3 Maximum Inventory

All hazardous wastes have been removed from waste piles and transferred into containers. All china clay waste is being handled according to V.E.5. of the Consent Decree. Master Metals is currently storing approximately 1500 tons of lead-bearing scrap, dross, china clay, and baghouse dust.

Spent acid from the battery cracking operation is generated at a rate of 2,000 gallons per month. The maximum volume of acid that is stored is 10,000 gallons.

2.4 Schedule of Closure

Master Metals signed the Department of Justice Consent Decree effective 17 January 1990. The Consent Decree requires the following:

- Removal of all solid and hazardous waste, other than china clay waste, from waste piles by 16 February 1990.
- Submittal of a partial closure plan by 18 March 1990.
- Implementation of partial closure according to the schedule contained in an approved partial closure plan.

Closure of the former hazardous waste units will be conducted on the following schedule:

- Remove all hazardous waste from waste piles (except china clay waste) by 16 February 1990
- Submit partial closure plan by 18 March 1990
- Begin closure of hazardous units within 60 days of approval of the closure plan
- Decontaminate units within 90 days upon initiation of closure
- Closure certification within 30 days upon completion of closure

3.0 CLOSURE PROCEDURES

Master Metals will meet the general closure performance standard of USEPA regulations at 40 CFR 265.11 and of Ohio ERPA regulations at OAC 3745-66-11. The general closure performance standard is quoted below:

The owner or operator shall close his facility in a manner that:

- (A) Minimizes the need for further maintenance; and
- (B) Controls, minimizes, or eliminates to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground water or surface waters or to the atmosphere.

Master Metals intends to complete a "clean closure" of the waste pile storage areas, the drum storage area, and the battery reclaiming areas designated by the Consent Decree as "closing hazardous waste management units." No waste piles of hazardous waste will exist at the facility. Upon certification of clean closure, the closed hazardous waste management units will only be used for storage of containerized hazardous waste. In addition, Area #5 will continue to be used for the battery breaking operations.

The requirements for a clean closure are stated in USEPA regulations at 40 CFR 265.258 and in Ohio EPA regulations at OAC 3745-67-58. The Ohio regulation is presented below:

- A. At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste, unless paragraph (D) of Rule 3745-51-03 of the Administrative Code applies:
or
- B. If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in paragraph (A) of this rule, the owner or operator finds that not all contaminated subsoils can be practically removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills (Rule 3745-68--10 of the Administrative Code).

Removal and containerization of material from waste pile units has been completed. China clay (lenox) waste is being handled in accordance with the Consent Decree. Drums of characteristic wastes D001, D002, D003, D007, and D008, and generic waste, F001, which were temporarily stored in the rail dock area, were removed in May 1988.

3.1 Storage Pad Cleaning

3.1.1 Drum Storage Area (Area #2)

The concrete pad will be visually inspected for spillage or residues. Spillage or residue will be removed or cleaned by washing with an industrial detergent and rinsing

with tap water. When the concrete pad is visually clean, it will be considered closed.

3.1.2 Waste File Storage Areas

The concrete pads in each of these hazardous waste management units will first be scraped manually using shovels to remove accumulated solids. The solids will be drummed and managed as hazardous waste until the solids are reclaimed in Master Metals on-site rotary furnaces.

The pads will then be washed with a detergent solution using a scrubber machine. The wash water will be vacuumed into a drum or drums for sampling and disposal purposes. The pads will then be rinsed with tap water. The rinse water will be vacuumed into other drums and sampled. Similarly, waters generated from equipment cleaning and personnel decontamination will be containerized, sampled and analyzed. If analysis of the rinse water indicates contamination the procedure will be repeated until target levels are reached in the rinse water. The target levels will be:

- Maximum sewer discharge limitations for lead as promulgated in Section 1.0914 of the Code of Regulations of the Northeast Ohio Regional Sewer District (see Appendix A).
- Analysis will be performed for total constituent concentration.

When the target levels are achieved, the pads will be considered clean. Containerized water, which includes waters from cleaning, rinsing, equipment cleaning, personnel decontamination, with constituent concentrations greater than target levels will be managed as a hazardous waste and will be sent off-site to a licensed hazardous waste treatment facility or will be treated on-site if Master Metals' treatment system is installed and operational. Waters that meet the sewer discharge standard will be discharged to the sewer, as is done with general wash waters.

3.2 Soil Sampling

The concrete pads in each of these areas will be visually inspected for defects. If the visual inspection reveals extensive cracking or deterioration of the concrete, Master Metals will conduct testing to verify whether there is contamination of the subsoil.

Soil beneath deteriorated or cracked concrete pads will be evaluated for contamination by collecting soil

samples at various depths and comparing the results to background samples. Each potentially contaminated area will be divided into a square grid pattern. Samples will be taken at the center of each interval. It is estimated that a maximum of four core samples at each suspect area will be sufficient to determine the extent of any contamination. Following the visual inspection, the findings will be reviewed with the Ohio EPA and US EPA to determine the need for sampling and locations where soil samples may be required.

According to the Ohio EPA "Closure Plan Review Guidance dated 8 February 1988, specific standards must be met in all applicable closure plans to determine clean levels for soils. Master Metals will determine "clean" levels for soil by using Alternate A, which states that "soils in the area of the hazardous waste management unit shall be considered to be contaminated if concentrations in the soil exceed the mean of the background samples plus two standard deviations." All metals analyses will be for total metals. In addition, soils at one location at each sampling site will be analyzed using the TCLP procedure if required by Ohio EPA.

If soil sampling is required, background locations will be determined prior to the initiation of any sampling. Background samples will be collected at locations off site. The background samples will be from the same soil horizon as the soil at the areas where contamination is suspected. Exact locations will be discussed with USEPA and Ohio EPA prior to sampling.

Slag and cinder fill material is deposited to a depth of approximately four feet with native soils of silty clay found at five feet below the surface. The water table is at a depth of approximately 10 feet.

At all locations, soil samples will be taken continuously with a split-barrel sampler. Soil within the following intervals will be retained for laboratory analysis; 0-6 inches below the surface; 2-2.5 feet into fill material; 0-6 inches below the interface of fill material and native soil; and 2-2.5 feet into native soil. Selected samples will be analyzed to measure the depth that metals have penetrated.

The level of metals in soil samples from a particular depth at each sampling location in each unit will be compared to background using statistical methods as specified by Ohio EPA's "Closure Plan Review Guidance." Soils that are statistically different from background samples will be considered contaminated.

Please note that preliminary but extensive soil and groundwater sampling has been conducted at Master Metals' facility in December, 1990. The results are included in Appendix A and B of the full facility closure plan.

4.0 SAMPLING AND ANALYSIS PLAN

This plan documents the procedures that will be followed by sampling team personnel. Included in the Sampling and Analysis Plan (SAP) are descriptions of sample collection and sample handling techniques. Samples obtained during closure will consist of wash water from the concrete pads, rinse water from the concrete pads, and soil samples if required.

Field sampling will be performed by Master Metals or its designated consultant. A sampling Team Leader (STL) will be responsible for all field sampling activities. The STL will be responsible for the availability and maintenance of sampling equipment and materials, for sample shipping and packing materials, for completion of all chain-of-custody records, and for the proper handling and shipping of samples. The STL will also be responsible for obtaining proper sample containers from the laboratory. Records of field activities will be compiled and forwarded to Master Metals. Sampling team members, under the STL's direction, will perform field measurements, sample collection and shipping, and equipment cleaning as required.

4.1 Concrete Pad Cleaning and Rinse Water Sampling

The concrete pads will be cleaned with a scrubber machine using a detergent wash followed by a high pressure rinse. The floor scrubber is a commonly used industrial tool that is used to remove dirt and oily residues off concrete pads. It consists of two, very stiff rotary brushes that scrub the concrete surface. While the brushes rotate, detergent is discharged onto the pad and cleans the residues off the pad. As it passes over an area, a vacuum unit (which is attached) sucks the residues and wash water into a container on the back of the machine. The pad will then be rinsed with tap water. The rinse water will be vacuumed into clean drums for storage. An analysis of the wash water, rinse water and tap water for lead will be performed to verify the cleanliness of the pad. If analyses indicate excessive concentrations of contaminants in the rinse water (based on the criteria described in previous Section 3.1.2), the procedure will be repeated until acceptable levels are obtained. The tap water used for preparing the detergent solution and for rinsing will also be analyzed to establish background water quality.

Samples of wash water and rinse water will be

collected from the containers using a bottom-entry/discharge Teflon bailer. Tap water will be drawn directly from the source. Samples will be discharged directly into pre-cleaned glass vials. Upon filling, each vial will be capped and then inverted and inspected to assure that no air bubbles are present. The vial will then be placed into an iced shipping container to await transport to the analytical laboratory. Upon completion of sampling, the samples will be delivered to the analytical laboratory either directly or by means of overnight courier. Chain-of-custody protocols will be maintained.

The sample vials will be supplied and prepared by the analytical laboratory. Containers for inorganic compound analyses will be pre-preserved for the specific compounds. Each sample container will be labeled, using indelible ink, noting the following:

- sample I.D. number
- date and time of sampling
- names of sampling personnel
- analysis required
- preservatives used
- unusual conditions (e.g.- contains detergent)

The sample I.D. numbers will be unique to each sample source.

All information on sample labels will be replicated in a field book. All drums/containers will be marked with the corresponding sample I.D. number.

Samples of rinse water and tap water will be collected during cleaning operations. Samples of wash water will be collected after all cleaning is completed (including equipment).

4.2 Soil Sampling

Samples will be obtained with a split-spoon sampler in general accordance with ASTM D-1586. Soil samples will be obtained continuously, at 2-foot intervals, at locations and levels described in Section 3.2. A representative portion from each designated level will be placed in a laboratory-prepared sample container for analysis. Samples will be transferred to the laboratory in iced, insulated shipping containers under chain-of-custody protocols.

If the number and locations of soil samples is not sufficient to define the extent of soil contamination in the area, a revised soil sampling plan will be prepared and submitted to the Ohio EPA within 15 days of such determination. In general, soil samples will continue to be

collected in a uniform manner as necessary to define the extent of any contamination.

All sampling equipment will be decontaminated before use and between sample locations. All equipment will be decontaminated prior to removal from the site.

4.3 Analytical Methods

Analyses will be conducted in accordance with methods outlined in US EPA Publication SW-846.

5.0 CLOSURE CERTIFICATION

When partial closure is complete, Master Metals will submit to both US EPA and Ohio EPA an operator's certification as well as certification by an independent Registered Professional Engineer that the waste pile storage areas have been closed in accordance with the approved Partial Closure Plan.

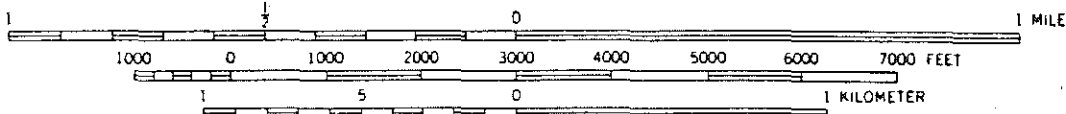
6.0 CLOSURE COST ESTIMATE

The costs to carry out this partial closure plan are presented in the attached Table 2.

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CLEVELAND SOUTH, OHIO

41081-D6-TF-024



CONTOUR INTERVAL 10 FEET

GENERAL LOCATION MAP
MASTER METALS - CLEVELAND, OHIO

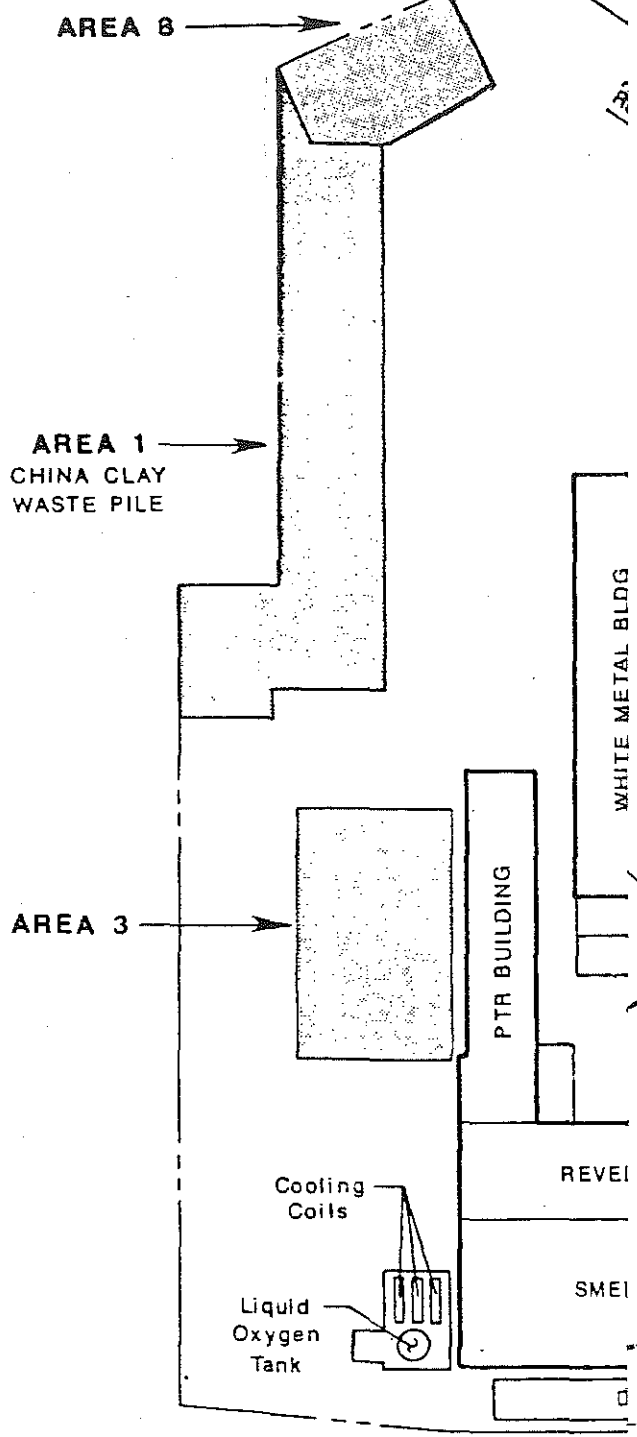
DRAWN BY: CGS

CHECKED BY: RAZ

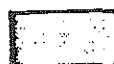
PROJECT NO: 88C6174

DATE: 3-9-90

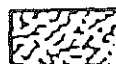
FIGURE NO: 1



LEGEND



CLOSING HAZARDOUS WASTE
UNITS (WASTE PILES)



FORMER, TEMPORARY BATTERY
CRACKING AREA (SUBJECT TO
CLOSURE)

SITE FEATURES MASTER METALS CLEVELAND, OHIO

Woodward-Clyde Consultants

DRAWN: CGS

JOB NUMBER

DATE: 3-8-90

CHECKED: RAZ

88C6174

FIGURE NO: 2

Table 1
 FORMER WASTE MANAGEMENT UNITS SUBJECT TO CLOSURE
 MASTER METALS, INC.

Location (Fig. 2)	Description	RCRA Waste Code	Approximate Area Dimension
Area #1	China Clay Waste Pile	D008	7000 sq. ft.
Area #2	Rail Dock Drum Storage Unit	D001/D002/D003 D007/D008/F001	450
Area #3	Waste Pile Storage Unit	D008	3900
Area #4	Waste Pile Storage Unit	D008	4500
Area #5	Waste Pile Storage Unit	D008	7000
Area #6	Waste Pile Storage Unit	D008	2000
Area #7	Former Battery Breaking Unit	D008	750
Area #8	Waste Pile Storage Unit	D008	1500

TABLE 2

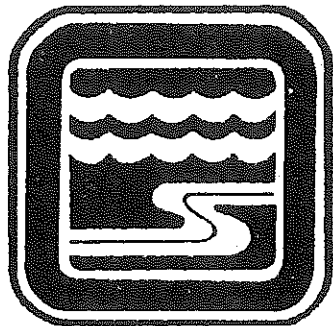
PARTIAL CLOSURE COST ESTIMATE
MASTER METALS, INC.
CLEVELAND, OHIOA. Concrete Pad Cleaning

Residue removal, cleaning, and surface rinsing (labor and materials @ 1.50/SF)	\$40650.00	
Analytical fees	5388.00	
Liquid waste disposal Sanitary sewer \$0.03-0.04/gallon	<u>1500.00</u>	\$ 47538.00

B. Soil Testing

Soil Sampling		
Mobilization/demobilization	\$ 1250.00	
Soil borings @ \$14/LF	4480.00	
Split-spoon samples @ \$10/ea.	1280.00	
Decontamination	360.00	
Materials	<u>350.00</u>	\$ 7720.00
Soil Analysis		
Total Metals @ \$140/sample	\$17920.00	
TCLP @ \$120/sample	<u>840.00</u>	\$ 16400.00

TOTAL \$ 74018.00



**NORTHEAST OHIO
REGIONAL
SEWER DISTRICT**

CODE OF REGULATIONS

TITLE I - SEWER USE CODE
[separate printing]

The **Code of Regulations** contains three Titles: the Sewer Use Code, the Pretreatment Regulations, and the Separate Sanitary Sewer Code. This Title has been separately printed for distribution to those entities most affected by the regulations contained herein. The User is advised that the other Titles may be applicable as well.

**ADMINISTRATIVE OFFICES
3826 EUCLID AVENUE
CLEVELAND, OHIO 44115-2504**

- (h) Brine from gas, oil, or water well drilling operations.

Section 1.0913

Discharge of Certain Materials Permitted Conditionally - Certain toxic substances and pathogenic bacteria, the acceptance of which into the System would otherwise be prohibited, shall be acceptable in a discharge if, (a) reduced by treatment at the source to a point that will meet the general purposes of these rules and regulations or come within any applicable standards set thereon now or hereafter in accordance with Section 1.0914 of this Code, or (b) discharged in such small concentrations so as to not be injurious to personnel; sewers; any biochemical, biological, or other sewage treatment process; or receiving waters. Such substances shall include, but not necessarily be limited to:

- (a) Any alcohols, antibiotics, arsenic, arsenicals, bromine, iodine, chlorine, copper, copper salts, cresols, creosotes, fluorine, formaldehydes, mercury, mercuricals, phenols, phenol derivatives, silver, silver compounds, silvermides, toxic dyes (organic or mineral), or zinc.
- (b) Any strong oxidizing agents such as chromates, dichromates, permanganates, or peroxides.
- (c) Any chemical compounds producing toxic, flammable, or explosive gases either upon evaporation, acidification, alkalization, oxidation or reduction.
- (d) Any strong reducing agents such as nitrites, sulfides, sulfites, and thiosulfates.
- (e) Any waste from industrial processes, hospital procedures or commercial processes containing viable pathogenic organisms.

Section 1.0914

Specific Limitations on Certain Materials and Substances in Discharges - (Compatibility with Regulatory Agency Requirements) - Certain substances or materials shall be considered by the District to be toxic or deleterious in nature as to require specific limitations on their concentration or quantity in any discharge to the District's sewerage system, whether or not such discharge has been subjected to any form of pretreatment. Such substances or materials and their allowable concentrations shall include but not necessarily be limited to those listed below:

Substance or Material	Concentration mg/l
Metals	
Cadmium	2
Chromium Hexavalent	10
Chromium Total	25
Copper	3
Nickel	10
Iron	50
Zinc	15
Lead	2
Cyanide	
Cyanide (CNA)	2
Total Cyanide	10
Phenol	50
Solvents	
Carbon Tetrachloride	Maximum Combined Concentration is
Tetrachloroethylene	
Trichloroethylene	1 mg/l
Methylene Chloride	25 mg/l
1,1,1, Trichloroethane	25 mg/l
Chlorobenzene	25 mg/l
O-Chlorobenzene	25 mg/l
Creosols	25 mg/l
Cresylic Acid	25 mg/l
Nitrobenzene	25 mg/l
Toluene	25 mg/l
Carbon Disulfide	25 mg/l
Isobutanol	25 mg/l
Spent Chlorofluorocarbon Solvents	25 mg/l
Methyl Ethyl Ketone	250 mg/l
The Maximum Combined Solvent Limitation is 250 mg/l	

The above limitations are intended to apply to all industrial users within the Northeast Ohio Regional Sewer District. If State or Federal regulatory agency regulations require a specific pretreatment concentration for a specific industry, the more stringent concentration level between this Code and such regulations expressed in Title II of this Code will apply.

Section 1.0915

Discharges Containing Ground Garbage - Approval of Certain Size Grinders Required - Any discharge to the District's sewerage system containing garbage may be made acceptable by means of grinding and dilution, provided however, that the installation and operation of any garbage grinder equipped with a motor of three-fourth (3/4) horsepower (0.76 h.p. metric) or greater shall be subject to review and approval by the District prior to such installation and operation and to periodic inspection by the District thereafter.

Facility Closure Plan
Master Metals, Inc.
Cleveland, Ohio

Prepared for:

Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113

Prepared by:

Woodward-Clyde Consultants
32111 Aurora Road
Solon, Ohio 44139

88C6174

17 May 1990

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FACILITY CLOSURE PLAN
MASTER METALS, INC.
CLEVELAND, OHIO

1.0 INTRODUCTION

The following itemizes the steps required to implement a full facility closure plan at the Master Metals, Inc. plant in Cleveland, Ohio. This plan has been prepared to satisfy the requirements of U.S. Environmental Protection Agency (U.S. EPA) regulations 40 CFR Part 265, Subpart G, OAC Rules 3745-66-10 through 3745-66-29, and in accordance with Section V.C.2 of the Department of Justice Consent Decree.

2.0 FACILITY DESCRIPTION

2.1 General Information

Master Metals, Inc., in Cleveland, Ohio, is a secondary lead smelting facility. The major operation at the plant consists of reclamation of materials containing lead. Master Metals reclaims lead by using two rotary furnaces. The plant accepts: lead-bearing dross; battery manufacturer's scrap; spent industrial batteries; and various other lead scrap. In addition, Master Metals recycles flue dust and captured baghouse emissions from its furnace operations. The plant has storage, treatment and generation areas that are subject to closure plan requirements of state and federal hazardous waste laws. A general location of the plant area is provided by Geological Survey topographical map in Figure 1. The plant area is shown in Figure 2. A plot plan of the area detailing the waste management units to be closed is given in Figure 2 and itemized in Table 1.

The hazardous waste management units are used for the following:

- Storage of lead-bearing dross and lead scrap (D008)
- Storage of lead-containing battery cells (D008)
- Storage of emission control dust (K069)
- Generation of emission control dust (K069)
- Generation of battery acid in the battery cracking area (D002)

These units are regulated under the Resource Conservation and Recovery Act (RCRA) and the Ohio Solid and Hazardous Waste Law. All units are contained on a reinforced concrete base.

2.2 Geological Setting

The property is situated on a buried glacial valley that is filled with 200 to 300 feet of sand, silt and clay, overlying shale bedrock. Slag and cinder fill material is deposited to a depth of approximately four feet, with native soils of silty clay found at five feet below the surface. The water table is at a depth of approximately 10 feet.

Groundwater is not used in the area as a source of drinking water. Drinking water is obtained from Lake Erie and supplied by the City of Cleveland Division of Water.

2.3 Waste Characterization

The following details the hazardous waste management units and the waste materials stored, generated or treated at the units.

2.3.1 Storage Bins

- One 90 cubic yard storage bin, located in the battery lay-down area and adjacent to the truck dock, designated bin number 1, for storage of lead battery cells (D008).
- One 90 cubic yard storage bin, located in the battery lay-down area, abutting the west retaining wall, designated bin number 2, for storage of lead battery cells (D008).
- Three 90 cubic yard storage bins, located directly north of the Smelting and Refining Building, designated bin numbers 3, 4 and 5, for storage of bulk hazardous waste (D008).
- One 90 cubic yard storage bin, located south of the main office building, designated bin number 6, for storage of in-plant produced slag (non-hazardous or D008).
- One 90 cubic yard storage bin, located adjacent to the rotary furnaces, designated bin number 7, for storage of in-plant produced dross (D008).
- One 90 cubic yard storage bin, located east of the White Metal Building, designated bin number 8, for storage of bulk hazardous waste (D008).

- One 90 cubic yard storage bin, adjacent to the east wall of the White Metal Building, designated bin number 9, for storage of bagged emission dust (K069) from in-plant baghouse emissions control system.
- Two hundred eighty (180) cubic yard storage bins, adjacent to the china clay waste pile, designated bin numbers 10 and 11, for storage of bulk hazardous waste (D008).
- One 90 cubic yard storage bin, located at the rear of the facility, adjacent to the container storage area, designated bin number 12, for storage of bulk hazardous waste (D008).

2.3.2 Container Storage Area

The container storage area is located at the southwest corner of the facility and consists of an eight-inch reinforced concrete base approximately 75,000 square feet in size. The area stores lead-bearing scrap and wastes (D008 and K069), primarily in 55-gallon drums, as well as containers of various other sizes.

2.3.3 Generation Areas

2.3.3.1 Air Emissions

Lead-bearing air emissions are generated from the operation of two rotary smelting furnaces. Four fabric filter baghouses control primary and secondary emissions from the furnaces. Emission control dust (K069) is periodically shaken from the filters and removed to a storage bin. All emission control dust is recycled on site.

2.3.3.2 Battery Cracking Area

Lead battery cells are removed from industrial batteries in the battery cracking area. Battery acid waste waters (D002) are gravity fed to a 6,000-gallon underground holding tank that is part of the on-site wastewater treatment system. Liquid from the holding tank is pumped to treatment tanks and neutralized prior to discharge to the sewer system.

2.4 Maximum Inventory

Master Metals stores, at any one time: 500 tons of lead-bearing scrap and dross; 400 tons of spent batteries; and 75 tons of lead-bearing baghouse dust. Spent acid from the battery cracking operation is generated at a rate of 6,000 gallons per month. The maximum volume of acid stored is 6,000 gallons.

3.0 CLOSURE PROCEDURES

Master Metals will meet the general closure performance standard of U.S. EPA regulations at 40 CFR 265.11 and of Ohio EPA regulations at OAC 3745-66-11. The general closure performance standard is quoted below:

The owner or operator shall close his facility in a manner that:

- (A) Minimizes the need for further maintenance; and
- (B) Controls, minimizes, or eliminates to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground water or surface waters or to the atmosphere.

Master Metals intends to complete a "clean closure" of the facility. The requirements for a clean closure are stated in U.S. EPA regulations at 40 CFR 265.258 and in Ohio EPA regulations at OAC 3745-67-58. The Ohio regulation is presented below:

- A. At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste, unless paragraph (D) of rule 3745-51-03 of the Administrative Code applies; or
- B. If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in paragraph (A) of this rule, the owner or operator finds that not all contaminated subsoils can be practically removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills (rule 3745-68-10 of the Administrative Code).

3.1 Inventory Removal

At the initiation of closure, all remaining inventory of lead-bearing scrap, dross and baghouse dust will be systematically reclaimed on site in the rotary furnaces. In order to obtain the proper mixture of materials in the smelting operation, there is a reasonable possibility that

the facility will receive additional hazardous and non-hazardous wastes during the inventory removal phase.

3.2 Storage Bin Cleaning

The 90 cubic yard and 180 cubic yard storage bins will first be scraped manually using shovels to remove accumulated solids. The solids will be drummed and managed as hazardous waste.

The containers will then be washed with a detergent solution. The wash water will be vacuumed into a drum or drums for sampling and disposal purposes. The pads will then be rinsed with tap water. The rinse water will be vacuumed into other drums and sampled. Similarly, waters generated from equipment cleaning and personnel decontamination will be containerized, sampled and analyzed. If analysis of the rinse water indicates contamination the procedure will be repeated until target levels are reached in the rinse water. The target levels will be:

- Public drinking water Maximum Contaminant Levels (MCL's) for lead and chromium as promulgated in 40 CFR 141.11 and OAC 7345-81-11.
- Analysis will be performed for total constituent concentration.

When the target levels are achieved, the containers will be considered clean. Containerized water, which includes waters from cleaning, rinsing, equipment cleaning, and personnel decontamination, with hazardous water constituent concentrations greater than target levels will be sent to Master Metals' on-site wastewater treatment system. Waters that meet the sewer discharge standard will be discharged to the sewer, as is done with general wash waters. Sludges remaining from the treatment operation will be handled as hazardous waste.

3.3 Container Storage Area Cleaning

The concrete pad in the container storage area will be cleaned of all spillage and residue using a combination industrial sweeper and vacuum system. Visible residue that cannot be removed with the sweeper/vacuum will be cleaned by washing with an industrial detergent and rinsing with tap water. The sweepings will be managed as hazardous waste. When the concrete pad is visually clean, it will be considered closed.

3.4 Air Emissions Control Equipment

Components of the air emissions control equipment (i.e., baghouses) come into contact with lead-bearing emissions dust while in service. These parts include: hooding; duct-work; dirty air plenums; hoppers; screw conveyors; fans; and filter bags.

Internal areas of the baghouse structures will be visually inspected. Gross deposition of dust will be manually removed and drummed. Further cleaning will be provided by an industrial vacuum system until all parts of the control equipment are visually clean. Since the rotary furnaces will no longer be in operation during the cleaning of the baghouses, all residues will be disposed off site as hazardous waste.

The filter bags will be removed from the baghouses and also disposed off site as hazardous waste.

3.5 Battery Cracking Area

3.5.1 Concrete Pad Cleaning

The pad will be washed with a detergent solution using a scrubber machine. The pad will then be rinsed with tap water. A sample of the rinse water will be analyzed. If analysis of the rinse water indicates contamination, rinsing of the pad will be repeated until target levels are reached in the rinse water. The target levels will be:

- Public drinking water MCL's for lead, as promulgated in 40 CFR 141.11 and OAC 7345-81-11.
- Analysis will be performed for total constituent concentration.
- Property of non-corrosivity (pH greater than 2 and less than 12.5).

When the target levels are achieved, the pad will be considered clean. Wash waters and rinse waters will be sent to Master Metals' on-site wastewater treatment system.

3.5.2 Underground Wastewater Holding Tank

The 6,000-gallon underground wastewater tank will be removed. Prior to removal, liquids in the tank will be pumped to the wastewater treatment system. The remaining solids and residues will be vacuumed into drums and handled as hazardous waste. The tank will then be rinsed with tap water. A sample of the rinse water will be analyzed. If analysis of the rinse

water indicates contamination, rinsing of the tank will be repeated until target levels are reached in the rinse water. The target levels are detailed in Section 3.5.1.

When the target levels are achieved, the tank will be considered clean, and removal of the tank will proceed. Rinse waters will be sent to Master Metals' on-site wastewater treatment system.

3.6 Traffic Areas

Concrete-paved surface areas in the main plant area of the facility (i.e., the area south of the parking lot), to include the lead smelting and refining building, will be cleaned of visible residue using an industrial sweeper and vacuum. All residues will be considered hazardous waste and handled accordingly.

3.7 Soil Sampling

A visual inspection will be conducted of the concrete-paved storage and generation areas. If the visual inspection reveals extensive cracking or deterioration of the concrete, Master Metals will conduct testing to verify whether there is contamination of the subsoil. Also, soils in unpaved areas will be tested if they are found to be stained or discolored. In addition, if a visual inspection indicates that leaking has occurred from the underground wastewater holding tank, soil samples will be collected in the vicinity of the tank. Soil samples will be collected where visibly contaminated soil is present.

Soil beneath deteriorated concrete pads or areas of stained soil will be evaluated for contamination by collecting soil samples at various depths and comparing the results to background samples. Each potentially contaminated area will be divided into a square grid pattern. Samples will be taken at the center of each interval. It is estimated that a maximum of four core samples at each suspect area will be sufficient to determine the extent of any contamination. Following the visual inspection, WCC will review the findings with the Ohio EPA and U.S. EPA to determine the need for sampling and locations where soil samples may be required.

According to the Ohio EPA "Closure Plan Review Guidance" dated 8 February 1988, specific standards must be met in all applicable closure plans to determine clean levels for soils. Master Metals will determine "clean" levels for soil by using Alternate A, which states that "soils in the area of the hazardous waste management unit shall be considered to be contaminated if concentrations in the soil exceed the mean of the background samples plus two standard deviations." All metals analyses will be for total metals. Soils will be analyzed for EP Toxicity at one location at each sampling area. Soils will be tested for corrosivity in the battery cracking

area and in the area of the underground tank, if visual inspection indicates leaking may have contaminated the soil.

If soil sampling is required, background locations will be determined prior to the initiation of any sampling. Background samples will be collected at locations off site. The background samples will be from the same soil horizon as the soil at the areas where contamination is suspected. Exact locations will be discussed with U.S. EPA and Ohio EPA prior to sampling.

Soil samples will be taken continuously with a split-barrel sampler. Soil within the following intervals will be retained for laboratory analysis; 0-6 inches below the surface; 2-2.5 feet into fill material; 0-6 inches below the interface of fill material and native soil; and 2-2.5 feet into native soil. Selected samples will be analyzed to measure the depth that metals may have penetrated.

The level of metals in soil samples from a particular depth at each sampling location in each unit will be compared to background using statistical methods as specified by Ohio EPA's "Closure Plan Review Guidance." Soils that are statistically different from background samples will be considered contaminated.

4.0 SAMPLING AND ANALYSIS PLAN

This plan documents the procedures that will be followed by sampling team personnel. Included in the Sampling and Analysis Plan (SAP) are descriptions of sample collection and sample handling techniques. Samples obtained during closure will consist of wash water and rinse water from the storage bins, wash water and rinse water from the battery cracking area, and soil samples, if required.

Field sampling will be performed by Master Metals or its designated consultant. A Sampling Team Leader (STL) will be responsible for all field sampling activities. The STL will be responsible for the availability and maintenance of sampling equipment and materials, for sample shipping and packing materials, for completion of all chain-of-custody records, and for proper handling and shipping of samples. The STL will also be responsible for obtaining proper sample containers from the laboratory. Records of field activities will be compiled and forwarded to Master Metals. Sampling team members, under the STL's direction, will perform field measurements, sample collection and shipping, and equipment cleaning as required.

4.1 Storage Bin, Concrete Pad and Underground Storage Tank Cleaning and Rinse Water Sampling

The storage bins, concrete pad in the battery cracking area and underground wastewater tank will be cleaned using a detergent wash followed by a high-pressure rinse with tap water. The rinse water will be vacuumed into clean drums for storage. An analysis of the wash water, rinse water and tap water will be performed to verify that the units are clean. If analyses indicate excessive concentrations of contaminants in the rinse water (based on criteria described in previous Sections 3.2 and 3.5.1), the procedure will be repeated until acceptable levels are obtained. The tap water used for preparing the detergent solution and for rinsing will also be analyzed to establish background water quality.

Samples of wash water and rinse water will be collected from the drums using a bottom-entry/discharge Teflon® bailer. Tap water will be drawn directly from the source. Samples will be discharged directly into pre-cleaned glass vials. The vial will then be placed into an iced shipping container to await transport to the analytical laboratory. Upon completion of sampling, the samples will be delivered to the analytical laboratory either directly or by means of overnight courier. Chain-of-custody protocols will be maintained.

The sample vials will be supplied and prepared by the analytical laboratory. Containers for inorganic compound analyses will be pre-preserved as appropriate for the specific compounds. Each sample container will be labeled, using indelible ink, noting the following:

- sample I.D. number
- date and time of sampling
- names of sampling personnel
- analyses required
- preservatives used
- unusual conditions (e.g. - contains detergent)

The sample I.D. numbers will be unique to each sample source.

All information on sample labels will be replicated in a field book. All drums/containers will be marked with the corresponding sample I.D. number.

Samples of rinse water and tap water will be collected during cleaning operations. Samples of wash water will be collected after all cleaning is completed (including equipment).

4.2 Soil Sampling

Core samples will be obtained with a split-barrel sampler in general accordance with ASTM D-1586. Soil samples will be obtained continuously, at 2-foot intervals, at locations and levels described in Section 3.2. A representative portion from each designated level will be placed in a laboratory-prepared sample container for analysis. Any remaining soil will be left on the ground surface. The borehole will be grouted to the surface. Samples will be transferred to the laboratory in iced, insulated shipping containers under chain-of-custody protocols.

If the number and locations of soil samples is not sufficient to define the extent of soil contamination in the area, a revised soil sampling and remediation plan will be prepared and submitted to the Ohio EPA within 15 days of such determination. In general, soil samples will continue to be collected in a uniform manner as necessary to define the extent of any contamination.

All sampling equipment will be decontaminated before use and between sample locations. All equipment will be decontaminated prior to removal from the site.

4.3 Analytical Methods

Analyses will be conducted in accordance with methods outlined in U.S. EPA Publication SW-846.

5.0 CLOSURE SCHEDULE

Master Metals, Inc. will close the facility according to the following schedule:

- Submit notification of final closure.
- Begin closure within 45 days of notification.
- Conduct on-site reclamation of all hazardous waste inventory within 90 days of closure commencement.
- Decontaminate units and remove underground tank within 180 days of closure commencement.
- Closure certification within 60 days of final closure.

6.0 CLOSURE CERTIFICATION

When closure is complete, Master Metals will submit to both U.S. EPA and Ohio EPA an operator's certification as well as certification by an independent Registered Professional Engineer that the hazardous waste units have been closed in accordance with the approved Facility Closure Plan.

7.0 CLOSURE COST ESTIMATE

The costs to carry out this closure plan are presented in the attached Table 2.

Tables

TABLE 1
 WASTE MANAGEMENT UNITS SUBJECT TO CLOSURE
 MASTER METALS, INC.
 CLEVELAND, OHIO

Description	RCRA Waste Code	Approximate Dimension
Storage Bins		
Bin #1	D008	90 cu. yd.
Bin #2	D008	90 cu. yd.
Bin #3	D008	90 cu. yd.
Bin #4	D008	90 cu. yd.
Bin #5	D008	90 cu. yd.
Bin #6	D008 or non-hazardous slag	90 cu. yd.
Bin #7	D008	90 cu. yd.
Bin #8	D008	90 cu. yd.
Bin #9	K069	90 cu. yd.
Bin #10	D008	180 cu. yd.
Bin #11	D008	180 cu. yd.
Bin #12	D008	90 cu. yd.
Container Storage Area	D008 and K069	75,000 sq. ft.
Emission Dust Generation		
Baghouse "A"	K069	--
Baghouse "B"	K069	--
New Baghouses (2)	K069	--
Battery Cracking Area	D008 and D002	7,000 sq. ft.

cu. yd. = cubic yards

sq. ft. = square feet

TABLE 2
CLOSURE COST ESTIMATE
MASTER METALS, INC.
CLEVELAND, OHIO

<u>A. Storage Bin Cleaning</u>			
Residue removal, cleaning and surface rinsing of storage bins (labor and materials)	\$	16,200.00	
Analytical fees		2,400.00	
Residue disposal (landfill)		5,200.00	
Liquid waste disposal sanitary sewer \$0.03/0.04/gallon		650.00	
			\$ 24,450.00
<u>B. Cleaning of Concrete Pad in Battery Cracking Area</u>			
Residue removal, cleaning and surface rinsing (labor and materials)	\$	5,250.00	
Analytical fees		420.00	
Liquid waste disposal sanitary sewer \$0.03/0.04/gallon		400.00	
			\$ 6,070.00
<u>C. Drum Storage Area and Paved Surface Area Cleaning</u>			
Sweep/vacuum concrete (labor and materials)	\$	3,900.00	
Residue disposal (landfill)		8,250.00	
			\$ 12,150.00
<u>D. Cleaning of Air Emissions Control Equipment</u>			
Residue removal and cleaning of equipment (labor and materials)	\$	5,550.00	
Residue and filter bag disposal (landfill)		2,500.00	
			\$ 8,050.00
<u>E. Underground Tank Removal</u>			
Residue removal, cleaning and surface rinsing	\$	1,500.00	
Residue disposal		6,250.00	
Analytical fees (tank cleaning)		420.00	
Tank removal		2,000.00	
			\$ 10,170.00
<u>F. Soil Testing</u>			
*Soil Sampling			
Mobilization/demobilization	\$	1,500.00	
Soil borings @ \$14/linear foot		6,160.00	
Split-spoon samples @ \$10 each		1,760.00	
Decontamination		500.00	
Materials		500.00	
			\$ 10,420.00
**Soil Analysis			
Total metals @ \$140/sample	\$	19,880.00	
EP Toxicity @ \$120/sample		1,320.00	
Corrosivity @ \$15/sample		300.00	
			\$ 21,500.00
TOTAL		\$	<u>92,810.00</u>

*Soil sampling costs are based on a maximum of four core samples taken at each of 10 paved or unpaved areas of the facility, plus four background core samples.

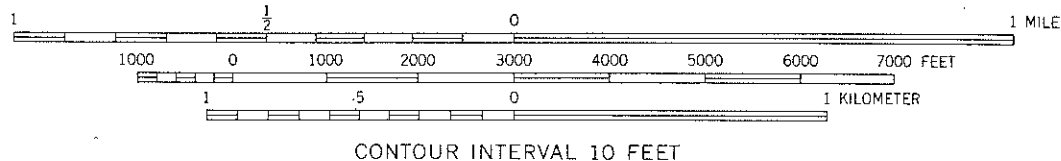
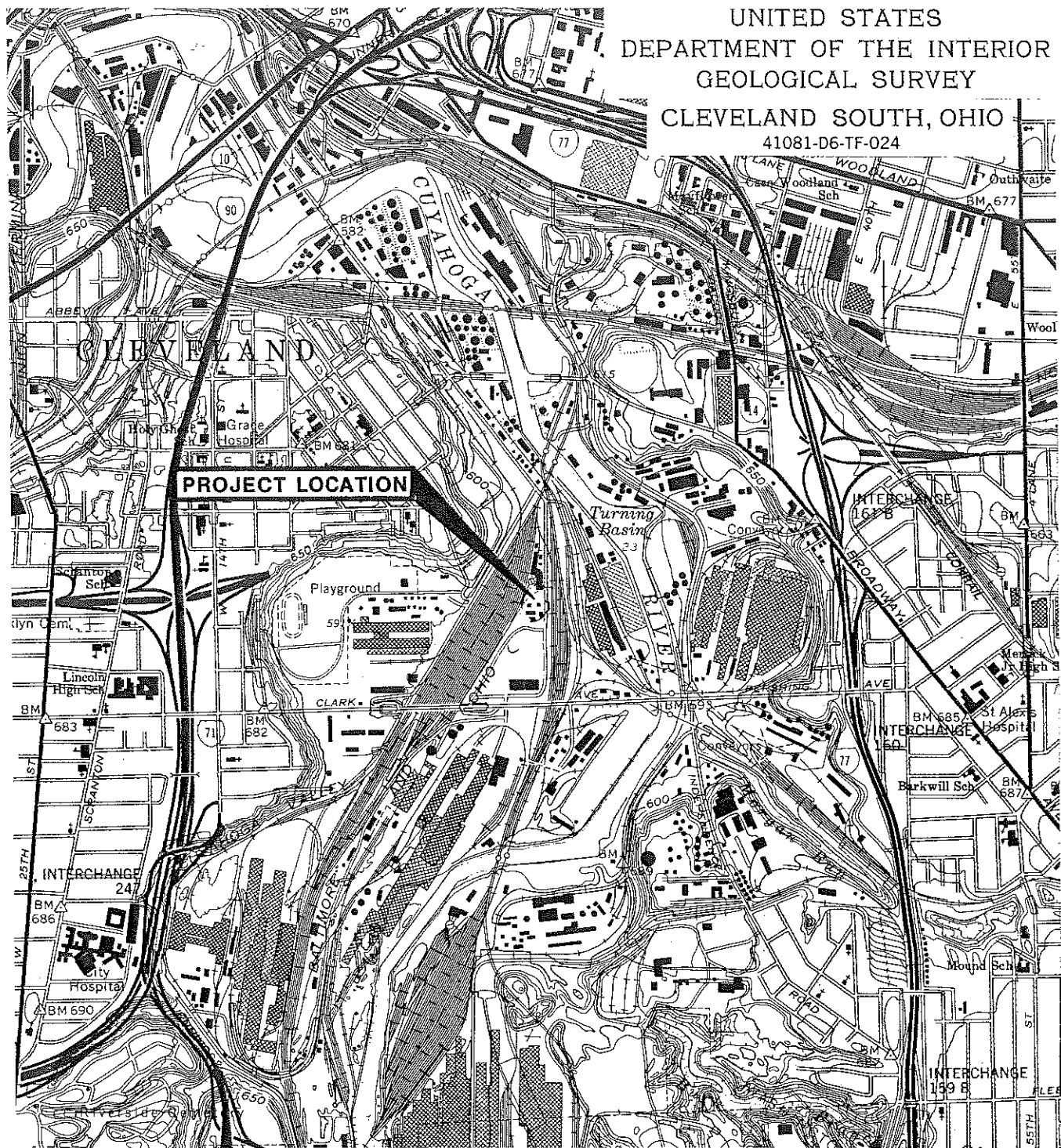
**Soil analysis costs include costs for analysis of soils at the underground tank.

Figures

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CLEVELAND SOUTH, OHIO

41081-D6-TF-024



CONTOUR INTERVAL 10 FEET

GENERAL LOCATION MAP
MASTER METALS - CLEVELAND, OHIO

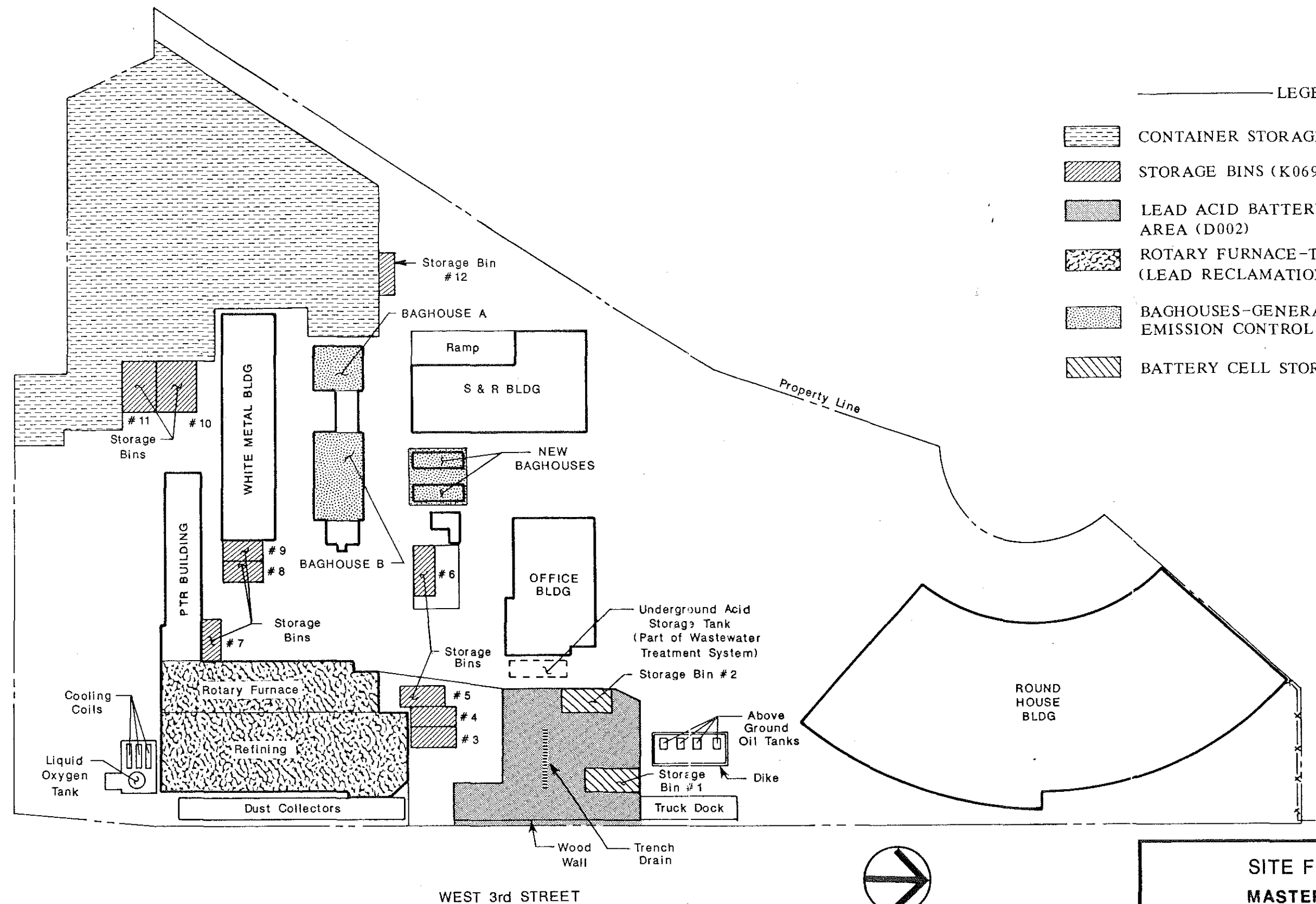
DRAWN BY: CGS

CHECKED BY: RAZ

PROJECT NO: 88C6174

DATE: 3-9-90

FIGURE NO: 1



- LEGEND
- CONTAINER STORAGE AREAS (D008, K069)
 - STORAGE BINS (K069, D008)
 - LEAD ACID BATTERY CRACKING AREA (D002)
 - ROTARY FURNACE-TREATMENT AREA (LEAD RECLAMATION)
 - BAGHOUSES-GENERATION OF EMISSION CONTROL DUST (K069)
 - BATTERY CELL STORAGE BINS

WEST 3rd STREET



0 30 60 90 120 180

APPROXIMATE SCALE IN FEET

SITE FEATURES
MASTER METALS
CLEVELAND, OHIO

Woodward-Clyde Consultants

DRAWN: CGS

JOB NUMBER
88C6174

DATE: 3-8-90

CHECKED: RAZ

FIGURE NO: 2

ENVISAGE ENVIRONMENTAL INCORPORATED

P. O. Box 152, Richfield, Ohio 44286

Phone (216) 526-0990

REPORT NO. 88-1148 (2403)

COMPANY Master Metals

TITLE Closure

DATE 3-16-88

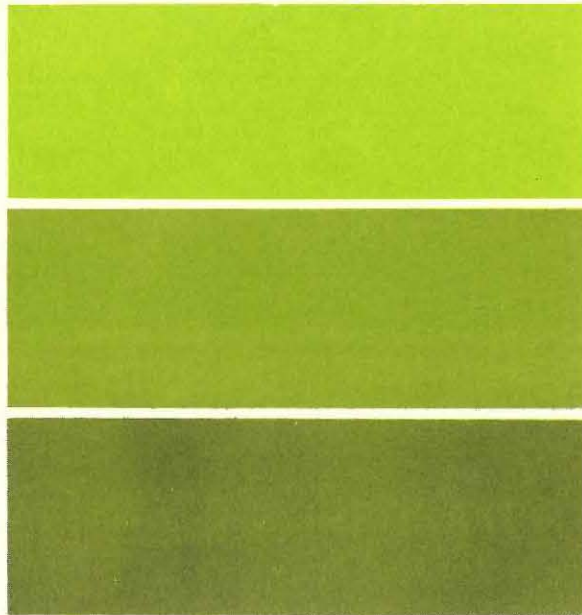
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MASTER METALS INC.

CLEVELAND, OHIO

CLOSURE RESULTS: DRILLING CORE SAMPLES

CONDUCTED - MARCH 16, 1988



**Partial Closure Plan
Master Metals, Inc.
Cleveland, Ohio**

Prepared for:

**Master Metals, Inc.
2850 West Third Street
Cleveland, Ohio 44113**

Prepared by:

**Woodward-Clyde Consultants
32111 Aurora Road
Solon, Ohio 44139**

88C6174

16 March 1990

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**PARTIAL CLOSURE PLAN
FORMER HAZARDOUS WASTE MANAGEMENT UNITS
MASTER METALS, INC.
CLEVELAND, OHIO**

1.0 INTRODUCTION

The following plan itemizes the steps required for closure of former hazardous waste management units at the Master Metals, Inc., Cleveland, Ohio plant. This plan has been prepared to satisfy the requirements of USEPA regulations 40 CFR Part 265, Subpart G, OAC Rules 3745-66-10 through 3745-66-20, and in accordance with Section V.C.1 of the Department of Justice Consent Decree.

2.0 FACILITY DESCRIPTION

2.1 General Information

Master Metals, Inc., in Cleveland, Ohio, is a secondary lead smelting facility. The major operation at the plant consists of reclamation of materials containing lead. Master Metals reclaims lead by using two rotary furnaces. The plant accepts: lead-bearing dross; battery manufacturer's scrap; spent industrial batteries; and various other lead scrap. In addition, Master Metals recycles flue dust and captured baghouse emissions from its furnace operations. The plant has storage areas that are subject to closure plan requirements of state and federal hazardous waste laws. A general location of the plant area is provided by Geological Survey topographical map in Figure 1. The plant area is shown in Figure 2. Seven hazardous waste management units are required to close in accordance with an approved closure plan. A plot plan of the area detailing the former waste management units to be closed is given in Figure 2 and itemized in Table 1.

The former hazardous waste management units were used to store piles of lead-bearing dross and scrap, and to store and reclaim lead-containing cells from spent industrial batteries. These units are regulated under the Resource Conservation and Recovery Act (RCRA) and the Ohio Solid and Hazardous Waste Law. The waste piles meet the definition of a characteristic waste for lead (D008) using EP Toxicity leachate testing. All units are equipped with 8-inch reinforced concrete pads.

2.2 Waste Characterization

The following details the hazardous waste management units to be closed and the waste materials that have been, or are currently being, stored at the units.

2.2.1 China Clay Waste Pile Storage Unit (Area #1)

This hazardous waste management unit occupies approximately 7,000 square feet of area abutting the southwest property line. The unit stores china clay waste, a lead-bearing material (waste code D008). The plant is currently processing the china clay waste in the reclamation operation at the facility.

2.2.2 Rail Dock Drum Storage Unit (Area #2)

Materials having the hazardous waste characteristics of ignitability (D001), corrosivity (D002), reactivity (D003), chromium (D007), lead (D008), and generic waste (F001), were stored on approximately 450 square feet of the rail dock area. The material was stored on a short-term basis and no known spills or leakage occurred during that time. The area is on a concrete pad that is currently being used for storage of containerized lead-bearing waste. The material was never processed by Master Metals and subsequently manifested and removed from the site by GSX Chemical Services of Ohio in May 1988. Master Metals will close the unit for the above noted waste codes.

2.2.3 Waste Pile Storage Unit (Area #3)

The 3900-sq. ft. storage unit is located south of the PTR building and has in the past been used for storage of lead-bearing dross (waste code D008).

2.2.4 Waste Pile Storage Unit (Area #4)

Waste piles of lead-bearing dross (waste code D008) were stored in this 4500-sq. ft. unit, which is located directly north of the reveratory and smelter buildings. In 1989, Master Metals installed three 90-yd³ steel containers for storage of dross material. The containers are covered with a tarpaulin for weather protection.

2.2.5 Waste Pile Storage Unit (Area #5)

Storage Area #5 is located directly east of the office building and is approximately 7,000 square feet in area. Formerly the area stored waste piles of dross (waste code D008) and was used for reclaiming lead-containing cells from spent industrial batteries. Currently, the area stores batteries on pallets and continues to be used for the battery reclamation operation (battery cracking).

Spent sulfuric acid is directed to a trench drain and is gravity fed to an underground 7,000-gallon holding tank that is part of the plant wastewater treatment system. The spent acid is pumped to an above ground neutralization tank and filter press prior to discharge to the sewer system.

Two 90-yd³ steel storage containers have been installed in this area to store lead-containing battery cells and battery casings.

2.2.6 Waste Pile Storage Unit (Area #6)

This hazardous waste management unit is located south of the office building and east of the Transformer Room. It is approximately 1200 sq. ft. in area. The unit stored piles of dross (waste code D008) on a concrete base in the past, but is currently storing slag byproduct from its smelting operation in a newly installed 90-yd³ steel storage container.

2.2.7 Former Battery Cracking Unit (Area #7)

This unit was used for battery reclamation operations and storage of lead battery cells (waste codes D008). The unit is approximately 750 square feet in area and is located at the rear of the plant adjacent to the container storage area.

Note that no storage containers, currently located within these hazardous waste management units, are included in this partial closure plan. The storage containers will be a part of a full facility closure and, if needed, post-closure plan, to be submitted by 17 May 1990.

2.3 Maximum Inventory

All solid wastes and hazardous wastes have been removed from waste piles, except for the china clay waste pile, and transferred into containers. All china clay waste will be handled according to V.E.5 of the Consent Decree. Master Metals stores at any one time: 500 tons of lead-bearing scrap and dross; 400 tons of spent batteries; and 75 tons of lead-bearing baghouse dust.

Spent acid from the battery cracking operation is generated at a rate of 6,000 gallons per month. The maximum volume of acid that is stored is 6,000 gallons.

2.4 Schedule of Closure

Master Metals signed the Department of Justice Consent Decree effective 17 January 1990. The Consent Decree requires the following:

- Removal of all solid and hazardous waste, other than china clay waste, from waste piles by 16 February 1990.
- Submittal of a partial closure plan by 18 March 1990.

- Implementation of partial closure according to the schedule contained in an approved partial closure plan.

Closure of the former hazardous waste units will be conducted on the following schedule:

- Remove all solid and hazardous waste from waste piles (except china clay waste) by 16 February 1990
- Submit partial closure plan by 18 March 1990
- Begin closure of hazardous waste units by 17 May 1990
- Decontaminate units by 15 August 1990
- Closure certification by 14 November 1990

3.0 CLOSURE PROCEDURES

Master Metals will meet the general closure performance standard of USEPA regulations at 40 CFR 265.11 and of Ohio EPA regulations at OAC 3745-66-11. The general closure performance standard is quoted below:

The owner or operator shall close his facility in a manner that:

- (A) Minimizes the need for further maintenance; and
- (B) Controls, minimizes, or eliminates to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste decomposition products to the ground water or surface waters or to the atmosphere.

Master Metals intends to complete a "clean closure" of the waste pile storage areas, the drum storage area, and the battery reclaiming areas designated by the Consent Decree as "closing hazardous waste management units." No waste piles of hazardous waste will exist at the facility. Upon certification of clean closure, the closed hazardous waste management units will only be used for storage of containerized hazardous waste. In addition, Area #5 will continue to be used for the battery cracking operations.

The requirements for a clean closure are stated in USEPA regulations at 40 CFR 265.258 and in Ohio EPA regulations at OAC 3745-67-58. The Ohio regulation is presented below:

- A. At closure, the owner or operator must remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, and structures and equipment contaminated with waste and leachate, and manage them as hazardous waste, unless paragraph (D) of rule 3745-51-03 of the Administrative Code applies; or

- B. If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required in paragraph (A) of this rule, the owner or operator finds that not all contaminated subsoils can be practically removed or decontaminated, he must close the facility and perform post-closure care in accordance with the closure and post-closure requirements that apply to landfills (rule 3745-68-10 of the Administrative Code).

Closure of the hazardous waste management units was begun by containerizing all hazardous waste in drums on skids, or 90-yd³ containers. All waste piles consisting of spent batteries, dross and scrap have been containerized since February 1990. China clay waste will be handled in accordance with the Consent Decree. Drums of characteristic wastes D001, D002, D003, D007, and D008, and generic waste, F001, which were temporarily stored in the rail dock area, were removed in May 1988.

3.1 Storage Pad Cleaning

3.1.1 Drum Storage Area

The concrete pad will be visually inspected for spillage or residues. Spillage or residue will be removed or cleaned by washing with an industrial detergent and rinsing with tap water. When the concrete pad is visually clean, it will be considered closed.

3.1.2 Waste Pile Storage Areas

The concrete pads in each of these hazardous waste management units will first be scraped manually using shovels to remove any accumulated solids. The solids will be drummed and managed as hazardous waste until the solids are reclaimed in Master Metals on-site rotary furnaces.

The pads will then be washed with a detergent solution using a scrubber machine. The wash water will be vacuumed into a drum or drums for sampling and disposal purposes. The pads will then be rinsed with tap water. The rinse water will be vacuumed into other drums and sampled. Similarly, waters generated from equipment cleaning and personnel decontamination will be containerized, sampled and analyzed. If analysis of the rinse water indicates contamination the procedure will be repeated until target levels are reached in the rinse water. The target levels will be:

- Public drinking water MCL's for lead and chromium as promulgated in 40 CFR 141.11 and OAC 7345-81-11.
- Analysis will be performed for total constituent concentration.

When the target levels are achieved, the pads will be considered clean. Containerized water, which includes waters from cleaning, rinsing, equipment cleaning, and personnel decontamination, with hazardous water constituent concentrations greater than target levels will be managed as a hazardous waste and will be sent to Master Metals' on-site acid neutralization system. Waters that meet the sewer discharge standard will be discharged to the sewer, as is done with general wash waters.

3.2 Soil Sampling

The concrete pads in each of these areas will be visually inspected for defects. If the visual inspection reveals extensive cracking or deterioration of the concrete, Master Metals will conduct testing to verify whether there is contamination of the subsoil.

Soil beneath deteriorated or cracked concrete pads will be evaluated for contamination by collecting soil samples at various depths and comparing the results to background samples. Each potentially contaminated area will be divided into a square grid pattern. Samples will be taken at the center of each interval. It is estimated that a maximum of four core samples at each suspect area will be sufficient to determine the extent of any contamination. Following the visual inspection, WCC will review the findings with the Ohio EPA and USEPA to determine the need for sampling and locations where soil samples may be required.

According to the Ohio EPA "Closure Plan Review Guidance" dated 8 February 1988, specific standards must be met in all applicable closure plans to determine clean levels for soils. Master Metals will determine "clean" levels for soil by using Alternate A, which states that "soils in the area of the hazardous waste management unit shall be considered to be contaminated if concentrations in the soil exceed the mean of the background samples plus two standard deviations." All metals analyses will be for total metals. In addition, soils will be analyzed for EP Toxicity at one location at each sampling area.

If soil sampling is required, background locations will be determined prior to the initiation of any sampling. Background samples will be collected at locations off site. The background samples will be from the same soil horizon as the soil at the areas where contamination is suspected. Exact locations will be discussed with USEPA and Ohio EPA prior to sampling.

Slag and cinder fill material is deposited to a depth of approximately four feet with native soils of silty clay found at five feet below the surface. The water table is at a depth of approximately 10 feet.

At all locations, soil samples will be taken continuously with a split-barrel sampler. Soil within the following intervals will be retained for laboratory analysis; 0-6 inches below the surface; 2-2.5 feet into fill material; 0-6 inches below the interface of fill material and native soil; and

2-2.5 feet into native soil. Selected samples will be analyzed to measure the depth that metals have penetrated.

The level of metals in soil samples from a particular depth at each sampling location in each unit will be compared to background using statistical methods as specified by Ohio EPA's "Closure Plan Review Guidance." Soils that are statistically different from background samples will be considered contaminated.

4.0 SAMPLING AND ANALYSIS PLAN

This plan documents the procedures that will be followed by sampling team personnel. Included in the Sampling and Analysis Plan (SAP) are descriptions of sample collection and sample handling techniques. Samples obtained during closure will consist of wash water from the concrete pads, rinse water from the concrete pads, and soil samples if required.

Field sampling will be performed by Master Metals or its designated consultant. A Sampling Team Leader (STL) will be responsible for all field sampling activities. The STL will be responsible for the availability and maintenance of sampling equipment and materials, for sample shipping and packing materials, for completion of all chain-of-custody records, and for proper handling and shipping of samples. The STL will also be responsible for obtaining proper sample containers from the laboratory. Records of field activities will be compiled and forwarded to Master Metals. Sampling team members, under the STL's direction, will perform field measurements, sample collection and shipping, and equipment cleaning as required.

4.1 Concrete Pad Cleaning and Rinse Water Sampling

The concrete pads would be cleaned with a scrubber machine using a detergent wash followed by a high pressure rinse. The floor scrubber is a commonly-used industrial tool that is used to remove dirt and oily residues off concrete pads. It consists of two, very stiff rotary brushes that scrub the concrete surface. While the brushes rotate, detergent is discharged onto the pad and cleans the residues off the pad. As it passes over an area, a vacuum unit (which is attached) sucks the residues and wash water into a container on the back of the machine. The pad will then be rinsed with tap water. The rinse water will be vacuumed into clean, food-quality drums for storage. An analysis of the wash water, rinse water and tap water for lead will be performed to verify the cleanliness of the pad. If analyses indicate excessive concentrations of contaminants in the rinse water (based on criteria described in previous Section 3.1.2), the procedure will be repeated until acceptable levels are obtained. The tap water used for preparing the detergent solution and for rinsing will also be analyzed to establish background water quality.

Samples of wash water and rinse water will be collected from the containers using a bottom-entry/discharge Teflon® bailer. Tap water will be drawn directly from the source. Samples

will be discharged directly into pre-cleaned glass vials with. Upon filling, each vial will be capped and then inverted and inspected to assure that no air bubbles are present. The vial will then be placed into an iced shipping container to await transport to the analytical laboratory. Upon completion of sampling, the samples will be delivered to the analytical laboratory either directly or by means of overnight courier. Chain-of-custody protocols will be maintained.

The sample vials will be supplied and prepared by the analytical laboratory. Containers for inorganic compound analyses will be pre-preserved as appropriate for the specific compounds. Each sample container will be labeled, using indelible ink, noting the following:

- sample I.D. number
- date and time of sampling
- names of sampling personnel
- analyses required
- preservatives used
- unusual conditions (e.g. - contains detergent)

The sample I.D. numbers will be unique to each sample source.

All information on sample labels will be replicated in a field book. All drums/containers will be marked with the corresponding sample I.D. number.

Samples of rinse water and tap water will be collected during cleaning operations. Samples of wash water will be collected after all cleaning is completed (including equipment).

4.2 Soil Sampling

Samples will be obtained with a split-barrel sampler in general accordance with ASTM D-1586. Soil samples will be obtained continuously, at 2-foot intervals, at locations and levels described in Section 3.2. A representative portion from each designated level will be placed in a laboratory-prepared sample container for analysis. Any remaining soil will be returned to the borehole in the same order in which it was removed. Samples will be transferred to the laboratory in iced, insulated shipping containers under chain-of-custody protocols.

If the number and locations of soil samples is not sufficient to define the extent of soil contamination in the area, a revised soil sampling and remediation plan will be prepared and submitted to the Ohio EPA within 15 days of such determination. In general, soil samples will continue to be collected in a uniform manner as necessary to define the extent of any contamination.

All sampling equipment will be decontaminated before use and between sample locations. All equipment will be decontaminated prior to removal from the site.

4.3 Analytical Methods

Analyses will be conducted in accordance with methods outlined in U.S. EPA Publication SW-846.

5.0 CLOSURE CERTIFICATION

When partial closure is complete, Master Metals will submit to both USEPA and Ohio EPA an operator's certification as well as certification by an independent Registered Professional Engineer that the drum storage area and waste pile storage areas have been closed in accordance with the approved Partial Closure Plan.

6.0 CLOSURE COST ESTIMATE

The costs to carry out this partial closure plan are presented in the attached Table 2.

TABLE 1
FORMER WASTE MANAGEMENT UNITS SUBJECT TO CLOSURE
MASTER METALS, INC.
CLEVELAND, OHIO

Location (See Fig. 2)	Description	RCRA Waste Code	Approximate Area Dimension
Area #1	China Clay Waste Pile Storage Unit	D008	7000 sq. ft.
Area #2	Rail Dock Drum Storage Unit	D001/D002/D003/D007/D008/F001	450
Area #3	Waste Pile Storage Unit South of PTR Building	D008	3900
Area #4	Waste Pile Storage Unit North of Smelter Building	D008	4500
Area #5	Waste Pile Storage Unit (includes current battery cracking and lay down area)	D008	7000
Area #6	Waste Pile Storage Unit East of Transformer Room	D008	1200
Area #7	Former Battery Cracking Unit	D008	750

TABLE 2
CLOSURE COST ESTIMATE
MASTER METALS, INC.
CLEVELAND, OHIO

A. Concrete Pad Cleaning

Residue removal, cleaning, and surface rinsing of concrete pads (labor and materials)	\$ 37,200
Analytical fees	4,715
Liquid Waste Disposal	
Sanitary Sewer \$0.03 - 0.04/gallon	1,500
	<hr/>
	\$ 43,415

B.* Soil Testing

Soil Sampling

Mobilization/Demobilization	\$ 1,250.00
Soil Borings @ \$14/linear foot	3,920.00
Split-Spoon Samples @ \$10/each	1,120.00
Decontamination	360.00
Materials	350.00
	<hr/>
	\$ 7,000.00

Soil Analysis

Total Metals @ \$140/sample	\$ 15,680.00
EP Toxicity @ \$120/sample	720.00
	<hr/>
	\$ 16,400.00

TOTAL **\$ 66,815.00**

*Estimate based on maximum of four core samples taken at each hazardous waste pile management unit plus four background core samples.

Scope of Work
Closure Plan Review
(including site visit and possible sampling visit)
Master Metals, Inc.
OHD 097 613 871

Background

Master Metal, Inc., is located at 2850 W. Third Street, Cleveland, Ohio. The facility is a hazardous waste treatment, storage, and disposal facility whose primary activity is cracking spent lead batteries and secondary lead recovery in a rotary kiln smelter.

On November 8, 1985, the facility's hazardous waste piles that contained lead-bearing dusts (D008 and K069) lost interim status for failure to certify compliance with financial requirements of 40 CFR 265, Subpart H. These units termed the closing Hazardous Waste Units, are the subject of the Partial Closure Plan. The other hazardous waste units, termed the Operating Hazardous Waste Units are the subject of the Final Facility Closure Plan. On behalf of U.S. EPA, DOJ filed a complaint for violations of RCRA on June 15, 1987, in the Northern District of Ohio seeking closure of the waste piles and compliance with financial responsibility requirement.

Because Master Metals filed for relief under Chapter 11 of the Bankruptcy Code, DOJ filed its objection to confirmation of the debtor's proposed Plan of Reorganization under Chapter 11. In its June 15, 1987, filing, DOJ alleged that the Plan failed to properly or adequately address the debtor's environmental obligations under RCRA. On September 14, 1987, the U.S. entered into a stipulation agreement with the Defendant that was approved by the Bankruptcy Court. On September 18, 1983, the Bankruptcy Court entered an Order Confirming a Plan of Reorganization that incorporates the above mentioned Stipulation covering environmental compliance financial obligations.

U.S. EPA and DOJ settled the civil suit against Master Metal, Inc., and the Consent Decree was entered in the Northern District of Ohio on January 16, 1990.

The Consent Decree provides for: closure of the (Loss of Interim Status) LOIS units by July 1990; immediate closure of other hazardous waste units except several container storage areas that can remain open; cease cracking batteries on the ground; establishment of a closure assurance trust fund for the closing units; compliance with operating record, financial, liability insurance, container storage, training, record-keeping, and labelling requirements. Financial resources and on-going compliance have continued to be a problem in this case.

The facility has submitted both a Partial and a Final Facility Closure Plan. Herein, the technical adequacy and completeness of these Closure Plans are at issue.

The evaluation of the Closure Plan documents will require the completion of four activities; (1) review of background information, (2) technical review and evaluation of Closure Plan, (3) preparation of Closure Plan modifications, and (4) provide technical support to EPA during meetings.

Task 2 -- Review of Background Information

The review of background information will include all the pertinent documents used by the facility to prepare the Closure Plans and the recent sampling reports produced by Master Metals. This information will include documents that (1) describe the facility's regulatory status to determine which units are hazardous waste units and must undergo closure and which units are solid waste management units and must undergo corrective action, (2) describe the nature and extent of contamination such as the RCRA Facility Assessment (RFA) and RCRA Facility Investigation (RFI) reports, and monitoring reports, and (3) evaluate clean closure and risk based closure options. The review of background information will also include identifying applicable state and federal regulations which the closure must meet. As part of the review of background materials it will be necessary to meet with Ohio Environmental Protection Agency and conduct a site visit. As part of the site inspection, photographs and a video are desired to demonstrate the appearance of the site. If necessary, sampling of soil and groundwater will be conducted to supplement information regarding nature and extent of contamination for review of the Closure Plans.

Task 2 -- Sampling

If it is determined by U.S. EPA and the contractor that supplemental sampling is necessary to delineate nature and ^{ex}tent of contamination in order to complete Closure Plan review, then the following tasks must also be completed.

Task 2a. -- Preparation of Work Plan

The contractor shall prepare a Site Visit Work Plan which will consist of the Sampling and Analysis Plan and Health and Safety Plan.

The Sampling and Analysis Plan will describe procedures for obtaining groundwater and soil samples. The samples will be analyzed for inorganic constituents. All samples will be split with the facility.

Water level measurements will be taken from monitoring wells at the facility.

Task 2b. -- Field Work

The contractor will perform field activities in accordance with the approved plans developed for Task 2a.

The contractor shall maintain a field logbook which will contain all pertinent information and field observations. This information will include descriptions of the area being sampled and any factor or conditions which may affect sampling procedures (prevailing weather, sampling terrain, etc.). Sampling methods detailed in the approved sampling plan are to be strictly adhered to. The contractor shall not authorize any modifications to the field work without first obtaining approval from U.S. EPA. Deviations or additions to the plan will be carefully monitored in the field logbook.

Task 2c. -- Documentation of Sampling Locations

Whenever samples are collected, the locations from which the sample was taken shall be verified. The contractor will take photographs to document sampling sites and to verify any written descriptions written in the field logbook.

Task 2d. -- Site Visit Report

The contractor shall submit a report after the site visit summarizing all the activities which occurred. The report will include the field logbook and photographs of sampling locations.

Task 2e. -- Sample Analysis/Validation

The contractor shall procure a U.S. EPA-approved laboratory for sample analysis. The contractor will perform data validation activities.

Task 2f. -- Quality Assurance/Quality Control Report

The contractor shall prepare and submit a Quality Assurance/Quality Control Report. The report will discuss the quality of the data collected during the field sampling with respect to field logs, sample management and tracking procedures, and document control and inventory procedures for both laboratory data and field measurements. The report will document the validation of the data at the appropriate laboratory QC level. Validated data will be presented in tabular form.

Task 3 -- Technical Review and Evaluation of Closure Plans

The Closure Plans will be evaluated for technical adequacy. The first part of the review will be to evaluate the assumptions made by the facility in preparing its Closure Plans. If the assumptions are not valid, recommendations should be supplied. The second part of the evaluation is to determine the accuracy of the cost estimate provided in the Closure Plans. The cost evaluation will identify areas which do not correspond with generally accepted engineering guidelines.

Task 4 -- Preparation of Closure Plan Modifications

After completing activities 1, 2 and 3, modifications to the Closure Plans should be developed to make the modified plans acceptable under RCRA including post closure and corrective action plans, if necessary. The modifications will provide feasible options for the closure of the hazardous waste units and appropriate corrective actions at the solid waste management units and areas of contamination. The modifications will also supply a cost evaluation with all supporting documentation. The Contractor will provide a written report documenting the findings, as well as a floppy disk formatted in Wordperfect.

Task 5 -- Provide Technical Support to EPA During Meetings

Assist EPA in preparation of materials for meetings with the facility and provide EPA with technical assistance during negotiations with the facility.

Estimated Level of Effort -- 500 hours (if sampling is necessary)
400 hours (if sampling is not necessary)

DELIVERABLES

The deliverables required under this work assignment are as follows:

- possible Sampling Visit Plan
- possible Summary report of field activities to include a copy of the field log
- possible Quality Assurance/Quality Control report
- Final Report

TRAVEL

Travel to the site and the OEPA-Northeast District Office will be required for field activities. Travel should be planned to visit both site and OEPA on same trip.

SCHEDULE

Completion of Work Assignment including Report of Findings should be provided within 6 weeks after issuance of work assignment.

The manager for this work assignment is Sheri L. Bianchin. She may be reached at (312) 886-4446.

HRE-8J:SBIANCHIN:ab:6-4446:1992-#1

closure.rpt

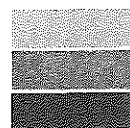
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CONCURRENCE REQUESTED FROM REB			
OTHER STAFF	REB STAFF	REB SECTION CHIEF	REB BRANCH CHIEF
	<i>SD</i> <i>3/3/92</i>		

CLOSURE RESULTS: DRILLING CORE SAMPLES

MASTER METALS

Conducted: March 16, 1988

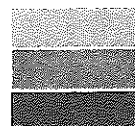


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P.O. Box 152 Richfield, Ohio 44286
Phone (216) 526-0990

INTRODUCTION

In accordance with the submitted closure plan for the Master Metals battery storage pad, core samples were taken at the prescribed depths until the water table was reached. The core samples were taken at two locations, the south end of the pad (well 1) and the north end of the pad (well 2). The drillings were conducted in wedge shaped holes that are 2.5 feet deeper than the actual elevation of the surrounding terrain. The water table was reached at a "true" depth of 9'8". The soil samples were analyzed for EP Toxicity as specified in 40 CFR 261 appendix 2. A sample of the soil was also analyzed for direct metal analysis and corrosivity at every depth. Still further all samples were analyzed for soil characterization and the remaining soil samples are kept in storage.

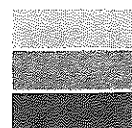


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KEY TO SAMPLE NUMBERS

<u>CORE DRILLING 1</u>	<u>CORE DRILLING 2</u>	<u>DEPTH (from bottom of wedge)</u>
011	021	.5 feet
012	022	1.0 feet
013	023	1.5 feet
014	024	2.0 feet
015	025	2.5 feet
016	026	3.0 feet
017	027	4.0 feet
018	028	5.0 feet
019	029	10.0 feet



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RESULTS

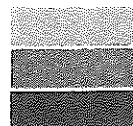
(via EP Tox, ppm)

SAMPLE NUMBER

	<u>011</u>	<u>012</u>	<u>013</u>	<u>014</u>	<u>015</u>	<u>016</u>	<u>017</u>	<u>018</u>	<u>019</u>
ARSENIC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BARIUM	<0.1	<0.1	<0.1	<0.1	<0.1	0.5	<0.1	0.1	<0.1
CADMIUM	0.67	0.2	0.60	0.07	0.65	0.6	0.07	0.06	<0.01
CHROMIUM	<0.01	0.04	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	<0.01
LEAD	3.40	0.4	0.22	0.19	0.60	0.59	0.22	0.14	0.25
MERCURY	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SELENIUM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SILVER	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

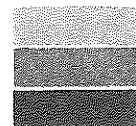
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	<u>021</u>	<u>022</u>	<u>023</u>	<u>024</u>	<u>025</u>	<u>026</u>	<u>027</u>	<u>028</u>	<u>029</u>
ARSENIC	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
BARIUM	<0.1	0.2	<0.1	<0.1	0.6	<0.1	0.1	<0.1	<0.1
CADMIUM	<0.01	0.04	<0.01	0.04	0.02	0.04	0.01	<0.01	<0.01
CHROMIUM	0.01	0.01	<0.01	0.02	0.01	<0.01	<0.01	<0.01	<0.01
LEAD	0.12	0.61	0.25	0.39	0.25	0.21	0.25	<0.05	0.09
MERCURY	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SELENIUM	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
SILVER	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

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MAXIMUM CONCENTRATION OF CONTAMINANTS FOR CHARACTERISTIC EP TOXICITY

ARSENIC	5.0 ppm
BARIUM	100.0 ppm
CADMIUM	1.0 ppm
CHROMIUM	5.0 ppm
LEAD	5.0 ppm
MERCURY	0.2 ppm
SELENIUM	1.0 ppm
SILVER	5.0 ppm



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The following results are from direct metal analysis of the core samples from various depths:

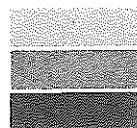
RESULTS

(in mg/kg)

SAMPLE NUMBER

	<u>011</u>	<u>012</u>	<u>013</u>	<u>014</u>	<u>015</u>	<u>016</u>	<u>017</u>	<u>018</u>	<u>019</u>
ARSENIC	20	1.6	7.0	7.0	2.0	3.5	9.0	8.0	9.0
BARIUM	45	53.0	57.0	91.0	152.0	330.0	120.0	73.0	55.0
CADMIUM	24.4	15.2	32.4	21.4	14.0	13.6	19.0	6.4	4.4
CHROMIUM	17.0	7.0	7.0	10.6	12.4	8.4	27.8	18.2	23.6
LEAD	190.0	156.0	76.0	116.0	62.0	35.0	140.0	76.0	32.0
MERCURY	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
SELENIUM	19.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
SILVER	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
PH	7.3	6.6	7.8	7.9	7.6	8.5	8.0	7.9	7.5

(no core samples in this lot are considered to be corrosive)



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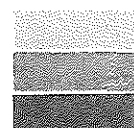
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SAMPLE_NUMBER

	<u>021</u>	<u>022</u>	<u>023</u>	<u>024</u>	<u>025</u>	<u>026</u>	<u>027</u>	<u>028</u>	<u>029</u>
ARSENIC	2.5	2.5	2.5	1.6	1.7	1.4	<1.0	2.0	2.0
BARIUM	110.0	100.0	170.0	310.0	140.0	270.0	290.0	210.0	50.0
CADMIUM	6.0	4.0	<1.0	4.0	2.0	3.0	3.0	7.0	2.0
CHROMIUM	6.0	6.0	8.0	9.0	27.0	12.0	13.0	16.0	12.0
LEAD	1,500.0	1,500.0	2,300.0	4,500.0	2,200.0	510.0	130.0	260.0	43.0
MERCURY	<0.5	0.9	<0.5	1.6	1.4	0.5	<0.5	<0.5	<0.5
SELENIUM	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
SILVER*	140.0	110.0	90.0	60.0	80.0	70.0	70.0	120.0	<1.0
PH	8.1	8.4	8.1	7.9	8.0	10.4	10.4	9.2	8.1

(no core samples in this lot are considered to be corrosive)

*Silver: Undetermined sample matrix interference. Further testing would be required for a more reliable analysis for Silver.



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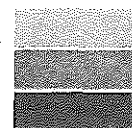
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SOIL IDENTIFICATION

The following tables are the results of soil classification for the core drillings at various depths.

Color	Primary Constituent(s)	Secondary Constituents	Gradation/Plasticity	Structural State	Moisture	Other (Fill, Seams, Organics)	USCS/ AASHTO	Sample #
Grayish Black	Slag AND Cinders	None	Well Graded	Medium Dense	Moderate	None	N/A	21A
Black	"	"	"	"	"	"	N/A	22A
Black	"	"	"	"	"	"	N/A	23A
Black	"	"	"	"	"	"	N/A	24A
Black	"	"	"	"	"	"	N/A	25A
Light to Dark Gray	Cinders	"	Poorly Graded	Loose	"	"	N/A	26A
Light to Dark Gray	Cinders AND Slag	"	Well Graded	Medium	"	"	N/A	27A
Light Brown	Silty Clay	Some Cinders	Low Plasticity	Very Stiff	"	"	CL	28A
Light Brown	"	Little Cinders	"	Soft	Very	"	CL	29A

Note: All slag samples have high degree of sulfur. All samples are fill material and are contaminated with various chemical constituents. Chemical testing is necessary in addition to the above geotechnical classifications.



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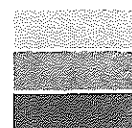
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SOIL IDENTIFICATION

The following tables are the results of soil classification for the core drillings at various depths.

Color	Primary Constituent(s)	Secondary Constituents	Gradation/Plasticity	Structural State	Moisture	Other (Fill, Seams, Organics)	USCS/AASHTO	Sample #
Black Some Orange	Cinder	None	Poorly Graded	Dense	Moderate	None	N/A	11A
Brown	Silty Fine Sand	Little Coarse Sand	"	Medium Dense	Moderate	None	SM	12A
Black	Cinders	Little Fine Sand	Well Graded	"	"	"	N/A	13A
Black	Cinders	None	Well Graded	"	"	"	N/A	14A
Black	Coarse Cinders	"	"	Dense	Saturated	"	N/A	15A
Dark Gray	Slag AND Cinder	None	"	"	Moderate	"	N/A	16A
Dark Gray	"	"	"	"	"	"	N/A	17A
Greenish Orange Brown	Silty Clay AND Black Cinders	"	Clay/Low Pl. Cinders Poor	Soft	"	None	N/A	18A
Light Brown	Silty Clay	Little Cinders	Low Plasticity	Stiff	"	"	CL	19A

Note: All slag samples have high degree of sulfur. All samples are fill material and are contaminated with various chemical constituents. Chemical testing is necessary in addition to the above geotechnical classifications.



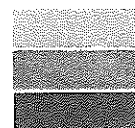
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SUMMARY

As part of the Closure Plan for the battery storage pad at Master Metals, the above results were obtained in accordance with the original plan. Core samples of soil were taken at the predescribed depths until the water table was reached. The cores were taken in wedge shaped holes that are approximately 2.5 feet deeper than the actual level of the surrounding soil. Analysis soil taken above the 2.5 foot holes was not conducted.

All samples were analyzed for the eight EP Toxicity metals according to 40CFR 261 appendix 2. In addition a direct metal analysis was taken on all samples and a complete soil identification study was conducted. As the results show, no samples of the core drillings show contamination as to the eight EP Tox metals. The results of direct metal analysis are as reported as is the soil characterization study. The conclusion is that the soil below 2.5 feet of the original elevation is environmentally inert and no contamination is suspected.



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OHIO ENVIRONMENTAL PROTECTION AGENCY
DIVISION OF SOLID AND HAZARDOUS WASTE MANAGEMENT (DSHWM)
CLOSURE PLAN REVIEW GUIDANCE
February 8, 1988

Closure plans are essential documents for directing and documenting activities at a hazardous waste management (RCRA) unit or facility once it ceases operation. In many cases, the plan may represent the best, and often the last, opportunity for Ohio EPA to ensure an environmentally acceptable closure at the site. It also provides the owner/operator the opportunity to document that the unit or facility is "clean" prior to subsequent use or sale of the property.

This Review Guidance is provided to direct Ohio EPA staff in conducting comprehensive reviews of closure plans. The items included in this guidance should be considered as minimum requirements under Ohio's hazardous waste rules and policy interpreting these rules. Please note that the content and policy in this Review Guidance are subject to revision, especially those related to "clean" standards and risk assessment. This version of the Review Guidance replaces the draft of December 10, 1985.

The following guidance applies to facilities operating under interim status. Rule citations are for interim status rules. However, this document may be used to review closure plans that are part of a facility's Part B application, which should be examined in appropriate detail.

These hazardous waste facility closure plan items will be considered as minimum requirements of state regulations and state policy, subject to future revision by DSHWM.

ADMINISTRATIVE PROCEDURES FOR OHIO EPA REVIEW AND APPROVAL

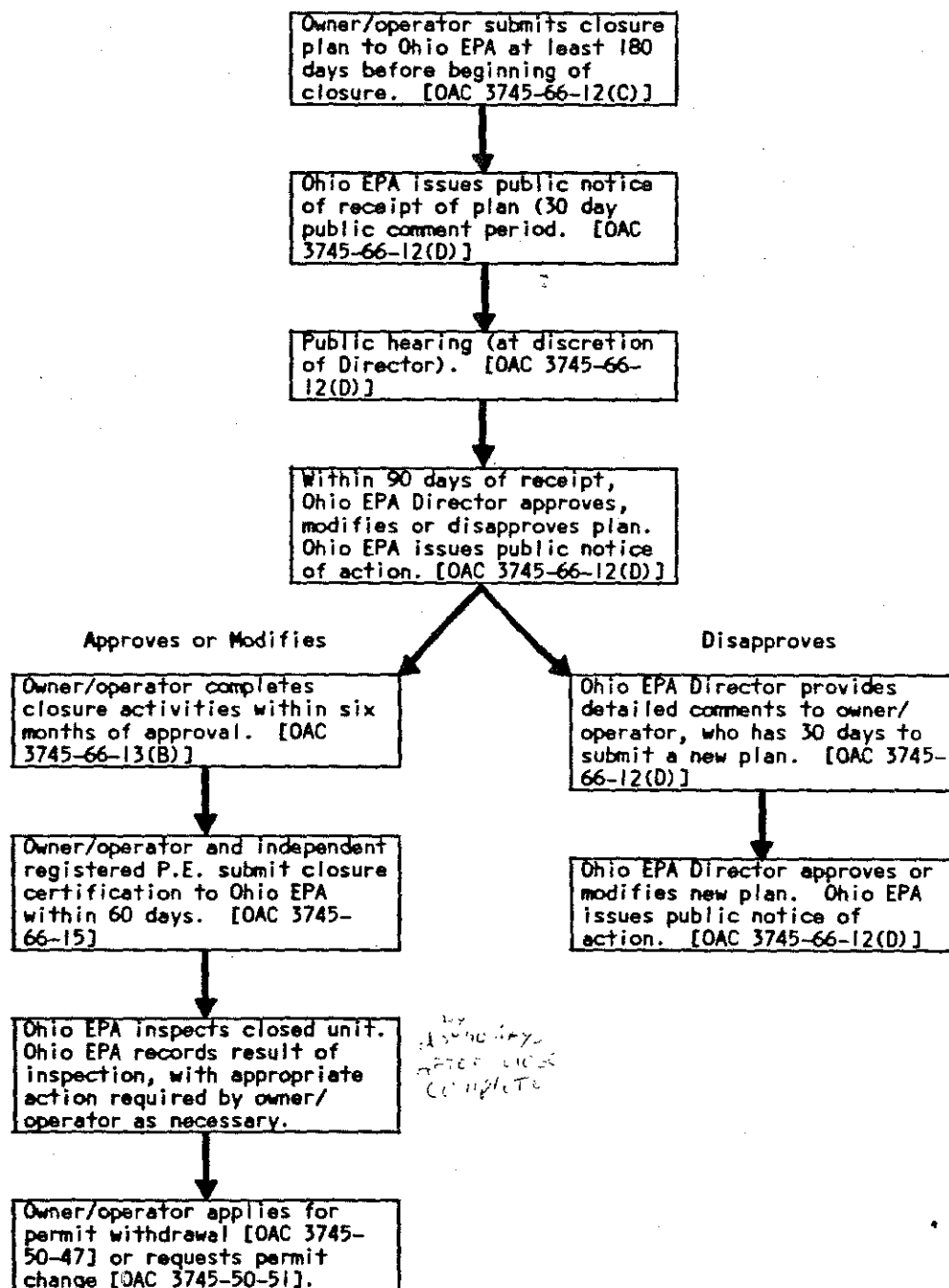
The Ohio Administrative Code (OAC), Chapter 3745 (Ohio hazardous waste rules), 40 CFR (USEPA hazardous waste or RCRA regulations) and standard Ohio EPA policy and procedures require the following sequence for review and approval of interim status closure plans. Figure 1 is a simplified flow chart of these administrative procedures.

- A. Submittal of Plan [40 CFR 265.112(c) and OAC 3745-66-12(C)] - The owner or operator must submit his closure plan to Ohio EPA at least 180 days before he expects to begin closure. This 180 day period may be shortened only at the discretion of Ohio EPA. To the greatest possible extent, the closure plan should be able to stand alone as a complete document, with minimal reference to other documents.

The owner/operator of the facility should submit at least three (3) copies of the closure plan to Thomas Crepeau, Ohio EPA, Division of Solid and Hazardous Waste Management, Program Planning and Management Section, P.O. Box 1049, Columbus, Ohio 43266-0149. An additional copy should be sent to the appropriate Ohio EPA District Office. Because Ohio EPA is not currently authorized to conduct the RCRA program, at least one copy must also be sent to George Hamper, Chief, Waste Management Division, Technical Programs Section, Ohio Unit, USEPA, Region V, EHS-13, 230 South Dearborn Street, Chicago, Illinois 60604.

FIGURE 1

ADMINISTRATIVE PROCEDURES FOR OHIO EPA REVIEW AND APPROVAL*



*Note that USEPA review and approval is also required and is conducted concurrently.

- B. Public Notice [40 CFR 265.112(d) and OAC 3745-66-12(D)] - Under 40 CFR 265.112(d) and OAC 3745-66-12(D), Ohio EPA publishes a public notice of the plan in the Ohio EPA Weekly Review and in a newspaper of general circulation in the county in which the facility is located. Notification of this action is sent to the facility owner/operator, the District Office and USEPA (Region V), with a copy of the closure plan sent to the county's major library. The DSHWM Program Planning and Management Section receives all public comments which are then forwarded to the DSHWM Technical Assistance and Engineering Section (TA&ES).

The public notice will also include reference to corrective action under the Hazardous and Solid Waste Amendments of 1984.

The 30-day public comment period must end before the Director of Ohio EPA can approve or disapprove the closure plan.

The District Offices have the primary responsibility for closure plan review. TA&ES, Central Office performs administrative processing of plans and is available to assist in technical review of each closure in conjunction with the District Offices. TA&ES also prepares modifications to the closure plan and responses to any public comments in cooperation with the District Offices. The TA&ES can provide review of specific items, such as landfill cover or cap design (Engineering Unit), or risk assessment (Technical Assistance Unit). For land disposal units or others with potential groundwater contamination, the Division of Groundwater will also review groundwater monitoring, contamination and site suitability issues.

- C. Closure Inspection - Facilities undergoing closure should be inspected by Ohio EPA near the date of submittal of the closure plan. The inspection may be necessary to determine detailed content needs of the plan.
- D. Detailed Closure Plan Review [40 CFR 265.112(d) and OAC 3745-66-12(D)] - This review must establish that the plan complies with all appropriate closure regulations, particularly the closure performance standard of 40 CFR 265.111 and OAC 3745-66-11. A closure plan must adequately address all relevant items in the "Plan Content" section of this Review Guidance before it can be considered to meet the closure performance standard. The most critical items in the closure plan are the "clean" level, the sampling plan, and in the case of landfills, the cap and cover design and groundwater monitoring.

Numerous documents are available to review a closure plan. Checklists for different types of RCRA units are available in USEPA's "RCRA Guidance Manual for Subpart G Closure and Post-Closure Care Standards and Subpart H Cost Estimating Requirements," EPA/530-SW-87-010, OSWER Policy Directive #9476.00-5 (January 1987). Copies of these checklists are found in Attachment A.

USEPA's Office of Solid Waste "Surface Impoundment Clean Closure Guidance Manual" will be useful for "clean" or risk assessment closures. At the present time, it is in draft form but should be available in a final version in early 1988. A USEPA closure plan guidance manual for RCRA tanks and containers should also be available in 1988.

The USEPA Guidance Manual may include USEPA policy and regulatory interpretations that may not be acceptable to state, regulatory agencies, including Ohio EPA. Such issues may include those such as acceptable background contaminant levels, acceptability of preliminary cleanup targets for a site, and other issues. Therefore, Ohio EPA may choose to differ on certain points from USEPA's Guidance Manual. However, the general goals concerning clean closure and allowance for demonstrating minimal risk or potential damage through risk assessment are acceptable to Ohio EPA.

Attachment B (Closure Plan Review Checklist) can also be used for general or initial review of a plan. This "Closure Plan Review Guidance" reiterates many points of the Review Checklist, but also attempts to expand and explain many areas. Do not use the attached Checklists alone to evaluate a closure plan. You must go beyond the level of detail in a Checklist to address the specific detail in a plan for an individual site.

By 40 CFR 265.112(d) and OAC 3745-66-12(D), Ohio EPA is required to complete review of a closure plan within 90 days of receipt. To provide for adequate administrative processing, reviews should be completed within 75 days and review comments should be submitted to the Technical Assistance Unit, DSHWM, within this time period.

- E. Director's Approval/Disapproval Letter - Within 90 days of closure plan receipt and after the close of the 30-day public comment period, the Director of Ohio EPA approves, modifies or disapproves the plan [40 CFR 265.112(d) and OAC 3745-66-12(D)]. These options for Ohio EPA action include:

1. approval as received (only acceptable for a "perfect" plan);
2. approval with modifications within 90 days of receipt; or
3. disapproval within 90 days of receipt, followed by submittal of a new (revised) plan by the owner/operator within 30 days, followed by Ohio EPA approval or approval with modifications within 60 days of receipt of the new (revised) plan.

The total period of time allowed by OAC 3745-66-12 for review and final action on a closure plan is 180 days. Figure 1 also explains the closure plan review process. Please note that the exact legal process to be followed by Ohio EPA is under review and is subject to change.

In the event that an unacceptable closure plan is received from the owner/operator and a disapproval is necessary, a disapproval letter from the Director of Ohio EPA shall be used to communicate the deficiency to the owner/operator. The disapproval letter must be accompanied by a detailed list of plan deficiencies and must be adequate to clarify all items necessary to submit an acceptable revised plan. The burden of preparation of a new (revised) plan is on the owner/operator. However, as mentioned above, the Agency can, and often does, establish further modifications through the closure plan approval letter which become part of the closure plan. The latter option may be used where modifications to the plan are limited in number and clear in intent.

Approval or disapproval of a closure may only be granted by letter from the Director of Ohio EPA. Attachment C shows the content of a closure plan approval letter.

Upon Director's approval, Ohio EPA publishes a public notice of this final action of the Director in the Ohio EPA Weekly Review and in a newspaper of general circulation in the county. The final action may be appealed to the Environmental Board of Review.

[Full closures also require compliance with Section 3004(u) of the Hazardous and Solid Waste Amendments of 1984 concerning corrective action and releases from any solid waste management unit. See Item I, below.]

- F. Permit Revisions, Modifications, Withdrawals - Any facility undergoing full or partial closure must submit a request for a permit revision, modification or withdrawal to Tom Crepeau, Program Planning and Management Section, Division of Solid and Hazardous Waste Management, Ohio EPA, P.O. Box 1049, Columbus, Ohio 43266-0149.

Appropriate regulations for permit revisions and modification are found in OAC 3745-50-51 (Permit Revisions and Modifications - latest version effective May 2, 1985). A copy of these regulations is included as Attachment D. Although there is no minimum period for advance submittal of a permit revision or modification request, it is recommended that the owner/operator submit this request at least 120 days in advance of the last day of use of the unit to be closed. This is important whether a unit is to be replaced or simply taken out of use. This advance notice should allow adequate time to process the request. Revisions or modifications regarding the unit being closed are not granted by Ohio EPA until certification of closure is received.

Appropriate regulations for permit withdrawal are found in OAC 3745-50-47 (Withdrawal of Permits - latest version effective August 30, 1984). A copy of these regulations is included as Attachment E. The owner/operator should submit the request for permit withdrawal immediately upon certification of complete closure.

H.B. 445 was signed in December, 1985, and altered the hazardous waste permit fee system. Ohio EPA charges each owner/operator for each type of hazardous waste management unit on a graduated scale. Obviously, since fees are assessed for each type of RCRA unit, it is imperative that the owner/operator submit permit revision, modification or withdrawal requests well in advance to avoid additional charges for units with certified closures. The fee system is provided in OAC 3745-50.

- G. Post-certification inspection - Although a facility may often be inspected by Ohio EPA prior to or during closure of a unit. Ohio EPA policy also requires Ohio EPA inspections of the closed hazardous waste management unit at the completion of all closure activities or when closure certification is received from the owner/operator.

After closure certification, all closed units must be inspected by Ohio EPA and this post-certification inspection must be documented by memorandum or letter. A copy of this documentation must be filed with Thomas Crepeau, Program Planning and Management Section, DSHWM, Columbus, and Michael Savage, Surveillance and Enforcement Section, DSHWM. The documentation should describe, at a minimum, the date of the inspection, appearance of the area of the closed unit(s), review of documents such as manifests, and other relevant factors. The inspector should state that, to the best of his/her knowledge, the unit(s) has been closed in accordance with the approved closure plan and all appropriate hazardous waste rules. If he/she cannot make such a statement, appropriate action, including referral for enforcement, should be taken.

- H. Amendment of Closure Plans [40 CFR 265.112 and OAC 3745-66-12] - Owners/operators must make every effort to complete closure as specified in the approved plan within the specified time limit (usually 180 days). Ohio EPA recognizes that occasionally completion within this period may be determined to be impossible. In addition, an unexpected event may occur during closure which prohibits the closure from being completed as approved. For example, the owner/operator may determine that removal of all contaminated soil is not possible. Within 30 days of the determination, the owner/operator should make a request to Ohio EPA for an extension of the time allowed for closure and, if necessary, submit an amended closure plan for review and approval when an unexpected event prohibits completion of closure as originally approved.

For extensions of time needed to complete closure, the request must justify the need for an extension and specify the number of additional days required to complete closure. Since an extension constitutes an amendment to the approved closure plan, the request must be public noticed. At the end of the public comment period, the Director makes a decision to approve or disapprove the extension request.

In the event that USEPA approval of a closure plan would follow Ohio EPA's initial plan approval, an "automatic" extension of the time allowed for

closure may be warranted. Standard language recognizing this situation has been incorporated in Ohio EPA closure plan approval letters. This language is as follows:

"If closure activities will, of necessity, take longer than 180 days to complete in order to allow for a period of time for review and approval by USEPA, a longer closure period is hereby approved pursuant to OAC rule 3745-66-13(B) provided _____ [COMPANY NAME] shall commence closure upon receipt of this approval by Ohio EPA or upon receipt of approval by USEPA, whichever occurs later. The closure period shall not exceed 180 days beyond the latter approval."

For cases requiring an amended plan, such as when a "clean" closure must be changed to a landfill closure, an owner/operator submits a detailed plan describing all necessary activities to comply with the closure performance standard (OAC 3745-66-11).

The mechanism for granting extensions of time or approving amended closure plans is through that specified in OAC 3745-66-12(D)(4).

- I. Corrective action - One of the more important provisions of the Hazardous and Solid Waste Amendments of 1984 is that pertaining to corrective action for continuing releases. This requires owners/operators to identify releases of hazardous waste or constituents which are or have been released from any solid waste management unit (broadly defined to include most activities or spills) at a site (see Attachments F and G).

Ohio EPA or USEPA has sent letters to all owners/operators of interim status facilities requesting information on corrective action, asking that the owner/operator complete a certification statement. The owner/operator was required to reply to Ohio EPA or USEPA, who must concur with the statement of the owner/operator. If the Ohio EPA did not or does not agree with the company's statement (or for some other reason), corrective action orders may be issued by USEPA under RCRA Section 3008(h).

Corrective action must be addressed before a facility can be relieved of responsibilities under the federal RCRA permit program.

An owner/operator may detect contamination during closure and make a demonstration that this contamination originates from a source other than the hazardous waste unit being closed. Such sources might include a Solid Waste Management Unit (SWMU) as defined by the Corrective Action requirements of the Hazardous and Solid Waste Amendments of 1984, contamination from adjacent or nearby properties, or non-RCRA or other sources. In any case, completion of the hazardous waste unit closure can only be acknowledged by Ohio EPA upon an acceptable demonstration by the owner/operator. Ohio EPA and/or USEPA may then determine appropriate requirements for contamination from sources other than the hazardous waste

unit being closed, and assign priorities to any investigations or remedial actions. The Corrective Actions Section and Technical Assistance and Engineering Section, DSHWM, Central Office, will coordinate and establish policy for corrective action at Ohio sites in conjunction with USEPA.

PLAN CONTENT

Outlines of closure plan content are provided through this Guidance and through the checklists in Attachments A and B. A closure plan should be written in such detail that an outside contractor could make an accurate bid to provide the services required. The plan should be of sufficient detail for review by the public.

The following should be considered as necessary consideration or content in review of closure plans:

1. DESCRIPTION OF FACILITY (Item 1 through 5 are considered to be required by 40 CFR 265.112, OAC 3745-66-12, and state policy) - The plan should include type of industry, products, location, size and other general, summarized information. This does not have to be an extensive description.
2. DESCRIPTION OF WASTE MANAGEMENT UNITS TO BE CLOSED - Describe each storage area, tank, waste pile, surface impoundment, landfarm, landfill cell or incinerator unit individually, include waste types for each unit (by standard chemical name and USEPA code), period of use, dimensions, construction details (e.g., materials), topography, soil types (as appropriate), and any other relevant matters. Identify these units by reference to line numbers on the Part A application incorporated into the Ohio permit (and the Part A portion of the final Part B permit application). Plans for complete closure must address all units on the Part A application.
3. MAP OF FACILITY - Location on a topographic or county map should be provided, plus a more detailed map or diagram of the facility, with each hazardous waste management unit clearly located and identified. Map scale should be specified.
4. DETAILED DRAWING OF UNIT(S) TO BE CLOSED - A sketch, diagram or blueprint drawing of the unit(s), showing dimensions, appurtenant structures and relationship to other points or structures on the facility property, at a minimum. Scale of the drawing should be specified.
5. LIST OF HAZARDOUS WASTE - The facility must provide a complete, detailed list of hazardous wastes (chemical name and EPA hazardous waste number) treated, stored or disposed of at the unit. The maximum inventory of each waste should be estimated. Trade names or common names should not be used; generic chemical names should be used to clearly indicate a waste's hazardous constituents. 40 CFR 265.112 and OAC 3745-66-12 require an estimate of the maximum inventory of waste in storage or treatment.

6. SCHEDULE FOR CLOSURE - 40 CFR 265.113(a) and OAC 3745-66-13(A) require the owner/operator to treat, remove or dispose of all hazardous waste in accordance with the approved closure plan within 90 days after receiving the final volume of hazardous wastes or 90 days after approval of the closure plan by the Director of Ohio EPA. A longer period may be approved by the Director of Ohio EPA [OAC 3745-66-13(A)].

The Ohio EPA may require that the owner/operator contact the facility inspector in advance of certain critical activities, such as soil sampling or removal, so that the inspector may be present to observe these activities.

Also, 40 CFR 265.113(b) and OAC 3745-66-13(B) state that the owner/operator must complete all closure activities in accordance with the approved closure plan and within 180 days after receiving the final volume of wastes or 180 days after approval of the closure plan, if that is later.

Closures requiring time periods longer than the above, including extensions after the Director's closure plan approval, must be reviewed by Ohio EPA and approved by the Director.

The plan should contain a schedule which shows all critical dates for closure, including waste removal, sampling, soil removal, critical points when the independent engineer or his representative will be present, independent engineer's certification, backfilling and other relevant activities. This schedule should start at the point of Director's approval, and not rely on calendar dates. Beware of sampling and waste or soil removal delays caused by inclement weather. This may result in the owner/operator being unable to meet the closure completion deadline and requesting an extension later. It is highly advisable that the closure plan or Director's approval letter incorporate any extensions beyond the 180-day limit.

7. AIR EMISSIONS (40 CFR 265.111 and OAC 3745-66-11) - When applicable, the plan should specify how the owner/operator will minimize or eliminate air emissions related to closure, including nuisance problems such as dust or odors. Examples include solvent emissions during transfers or dust problems related to solidification. In such cases, it may be appropriate for Ohio EPA's Division of Air Pollution Control and/or the local air agency to assist in closure plan review.
8. PERSONNEL SAFETY AND FIRE PREVENTION (40 CFR 265.111 and OAC 3745-66-11) - In addition to obvious measures needed to protect the health of nearby residents, the owner/operator must clearly show that measures will be taken to protect all personnel (including contractors and visitors) involved in the closure or possibly exposed to hazardous waste by the closure activity. This includes personnel decontamination.

9. DECONTAMINATION EFFORTS (40 CFR 265.114 and OAC 3745-66-14) - The owner/operator should describe all efforts to clean or decontaminate hazardous waste and its residues and constituents from tanks, paved areas, concrete, pipes, pumps, sumps and any other appurtenances to the hazardous waste management unit. The owner/operator should specify use of any reasonable means to clean or decontaminate, including solvent washing, pressure washing, scraping or other means.

The number of rinses or washings is at the discretion of the closure plan reviewer, but a maximum of 2 or 3 efforts should suffice. As a matter of Ohio EPA policy, no more than 1 mg/l of any listed RCRA-regulated waste solvent should remain in a rinseate before a storage pad or other structure could be considered "clean".

Concentrations in rinseate above this level should classify the rinseate as hazardous waste. (Please comment if you have any alternative "clean rinseate" level). For characteristic wastes, the rinseate must not be hazardous by characteristics specified in 40 CFR 261 and OAC 3745-51.

Tanks containing hazardous waste must be subjected to all reasonable means of decontamination before they should be considered "clean." This includes pressure rinses, solvent washes, manual sludge removal and other means. The independent engineer should certify the methods used and that the minimum amount of residue remains.

A description of how waste material (rinseate, etc.) from decontamination will be managed and an estimate of the volume of waste material should also be provided. Please note that residue from listed hazardous waste must be managed as a hazardous waste.

10. "CLEAN" LEVELS FOR SOIL (40 CFR 265.111 and OAC 3745-66-11) - Perhaps the most problematic issue for closures is the determination of "how clean is clean." All closure plans should state a clean level for soil in the area of the hazardous waste management unit, unless, as an activity normally associated with a certain management method, waste is legally placed in or on the land. Examples include land disposal or land treatment, although even in these cases closure must ensure that migration of hazardous waste or constituents does not occur. Be aware that there are limitations for land treatment.

In order to establish consistent "clean" levels for hazardous waste closures in Ohio, the following alternative standards should be met in all applicable closure plans:

Naturally Occurring Elements or Compounds:

Alternative A - Soils containing naturally occurring elements or compounds in the area of the hazardous waste management unit shall be considered to be contaminated if concentrations in the soils exceed the mean of the background samples plus two standard deviations.

All metals analyses must be for total metals.

It is important that background soil be of the same type of soil horizon material as the comparison sample. Ohio EPA may require the owner/operator to determine and compare soil texture (percent silt, sand, clay), soil pH and cation exchange capacity. Ohio EPA also may request to be notified in advance of the collection of soil samples, and also may request to be consulted on the acceptability of the points of background sample collection.

Alternative B - Soils containing RCRA-regulated metals shall be considered to be contaminated if concentrations in the soil exceed the upper limit of the range for Ohio farm soils, as given below:

<u>Metal</u>	<u>Range</u> (Total Metal Concentration in ug/g)
Cadmium	0 - 2.9
Chromium	4 - 23
Lead	9 - 39

(Source: Logan, T.J. and R.H. Miller, 1983. Background Levels of Heavy Metals in Ohio Farm Soils. Research Circular 275, Ohio State University, Ohio Agricultural Research and Development Center, Wooster).

All metals analyses must be for total metals.

Ohio EPA may reject any of the above alternatives based on site-specific information. Also, the Agency may accept alternate statistical methods if the owner/operator can demonstrate that the statistical method proposed is environmentally acceptable and is technically superior.

Compounds Not Naturally Occurring:

Soils containing RCRA-regulated compounds or elements (D, F, K, P or U wastes or 40 CFR 261, Appendix VIII constituents) not naturally occurring in soils in the area of the hazardous waste management unit shall be considered to be contaminated if these compounds or elements are present above analytical detection limits using methods in USEPA's Publication SW-846 "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods."

While it is recognized that these "clean" levels may be difficult to achieve in all situations, Ohio EPA believes stringent standards are justified by the performance standard for closure (OAC 3745-55-11 and 3745-66-11; 40 CFR 264.111 and 265.111), by prohibition of pollution of waters of the state (ORC 6111.04), and by USEPA's "Ground-Water Protection Strategy" (August, 1984).

In any closure with soil contamination potential, the owner/operator must determine the soil contamination extent and contaminant concentrations. Exceptions may include closures of landfills or deep wells, except where contamination outside of the regulated unit is suspected or evident.

Health-Based Cleanup Level

Recent developments in USEPA regulations and Ohio EPA rules related to closure plans have "opened the door" for health-based cleanups or risk assessment as a third option for closure. The other two options are, of course, clean closure (complete removal of waste and contaminated soil) and closure as a landfill with post-closure care. Federal regulations of May 2, 1986 (51 FR 16422) and March 19, 1987 (52 FR 8704) modified the closure performance standard such that risk assessment, or what constitutes "decontamination" of a site, may be considered by USEPA as a closure option. Ohio rules for closure which parallel the May 2, 1986, federal regulations became effective November 13, 1987.

While Ohio EPA has not yet adopted (as of February 8, 1988) the equivalent of USEPA's March 19, 1987, regulations clarifying that risk assessment may be an option, this document serves to establish that it is Ohio EPA, DSHWM policy to consider risk assessment as a possible third option for closure. Ohio EPA will expect complete, site-specific demonstrations of protection of human health and the environment in such closure plans.

The policy in the above two paragraphs on health-based cleanup levels and risk assessment was first presented in an Ohio EPA Inter-Office Communication of November 19, 1987, from Ed Kitchen, Manager, TA&ES, DSHWM.

An additional closure option, "hybrid closure," was proposed by USEPA on March 19, 1987 (52 FR 8712).

The owner/operator has the option to propose a site-specific, health-based cleanup level. A site-specific cleanup level proposal must document that the contaminants left in the soil will not adversely impact any environmental media (ground water, surface water, or atmosphere), and that direct contact through dermal exposure, inhalation or ingestion will not result in a threat to human health or the environment. USEPA is currently developing a guidance document for clean closure. Until this document becomes available, owners/operators should refer to 52 FR 8704 (March 19, 1987) and the draft USEPA Surface Impoundment Clean Closure Guidance Manual (October 12, 1987) for demonstration references. Toxicity information for hazardous constituents can be obtained from USEPA's Office of Solid Waste, Characterization and Assessment Branch, in Washington, D.C., (202)382-4761.

11. SAMPLING PLAN AND ANALYTICAL METHODS (40 CFR 265.111 and OAC 3745-66-11)
- Closures of units where there is any evidence of or potential for leaks or spills or potential for waste or waste constituent (Appendix IX) migration must include sampling of soil to determine the nature and extent of contamination of soil.

In the event of extensive soil contamination, groundwater monitoring also may be required through the closure plan or through corrective action orders or corrective action provisions of a Part B permit. If the unit is already subject to groundwater monitoring requirements, the location, frequency or parameters for groundwater sampling may also be modified or extended beyond closure, even if the facility closes "clean."

An adequate soil sampling and analysis plan should include the following:

1. parameters to be analyzed
2. locations of samples (both surface points and depths)
3. background samples (when applicable)
4. sampling methods and equipment
5. analytical methods
6. evidence of a quality assurance/quality control plan for laboratory analyses
7. a clear statement of the "clean" level for soil

Parameters to be analyzed for in soil may include any element or compound that is a hazardous waste or hazardous waste constituent (as specified in 40 CFR 261 and OAC 3745-51). Parameters may be proposed by the owner/operator or the Agency, but all must be acceptable to the Agency. Parameters should not only be based on knowledge of the wastes managed at the unit, but may also include other potential elements or compounds used at the facility which generated the waste. This is similar to considerations applied by USEPA for waste delistings. For example, soil underlying an F006 surface impoundment might also be analyzed for 1,1,1-trichloroethane, a solvent likely to be used at a plating facility. Additional parameters for analysis are required at the discretion of the Agency.

Locations of soil samples must be selected to adequately determine the horizontal and vertical extent of all contaminants specified previously. To determine horizontal extent a (1) grid system or (2) directed system should be used. A grid system uses a regular pattern, either rectangular or triangular to determine regular or random sampling points. A circular pattern of sampling around a central point may also be used. One

variation of regular sampling would include linear sampling along a drainageway, boundary or other linear dimension. A directed system would focus samples on an area of suspected contamination such as the downslope or downwind side of a waste storage unit. Grid sampling and directed sampling may both be used in the same closure plan.

For grid sampling, the following equation may be used to determine grid intervals and the number of samples in a given area:

$$GI = \sqrt{\frac{A}{GL}} \text{ sub } L \Rightarrow GL$$

The above establishes grid point representation, proportioned to the size of the area for equal weighting, where GL is the length of the area to be gridded (units), A is the area to be gridded (square units), and GI is the grid interval (units). This calculation of the size of grid intervals may be modified at the discretion of Ohio EPA.

Whenever random sampling within a grid is chosen, the minimum number of samples must be acceptable to Ohio EPA. Distances of 25-100 ft. are common for separation of samples for a relatively large unit.

The interval for sampling soil at various depths may be dependent on several factors, including: (1) soil type and permeability; (2) suspected magnitude of surface contamination; (3) physical state of the waste and its mobility; (4) height of liquid head at the ground surface; (5) length of time that waste was present at the site; and (6) relative toxicity of the waste. The depth intervals typically selected vary from 4-6 inches to 3 feet. However, in the upper 3-4 feet of soil, sampling interval should not exceed one foot.

Background samples are needed when the hazardous waste constituent of interest naturally occurs in soil, such as heavy metals. (A few toxic organics, such as phenol or formaldehyde, may be naturally produced, but their concentrations in soil would typically be very low and near or below detection limits). Background samples are used to compare statistically the natural condition to the potentially contaminated area. The Ohio EPA expects the owner/operator to compare to background concentrations using Alternatives A or B in Item 10 of this guidance. Background samples should be taken in areas minimally affected by industrial or other pollution. They may be taken away from the owner/operator's property, but as close as possible. Background samples should be taken from soil depths and soil horizon materials similar to those of the potentially contaminated area.

Sampling methods and equipment, as well as laboratory analytical methods, should follow guidance in USEPA's SW-846, "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Third Edition" (see 40 CFR 260.11). Field sampling methods, including soil sampling, not included

in SW-846 must be acceptable to Ohio EPA before they are used in the closure. This includes methods such as drilling, borings, etc. When available, standard procedures, as defined by USEPA or Ohio EPA, should be followed.

While laboratory analyses should use SW-846 methods, each laboratory analyzing samples must show that it has a quality assurance/quality control plan for each parameter of interest. QA/QC procedures should be similar to that in the Ohio EPA/Ohio Department of Health's "RCRA Laboratory Quality Assurance Project Plan" (1983). Submittal of a full QA/QC plan is not required, but evidence of such a program must be presented to show that the laboratory has a complete QA/QC program for SW-846 methods.

A "clean" level for soil is obviously the end result of closure. The sampling plan should be structured so that it clearly determines when "clean" is achieved. You should refer to Section 10 of this guidance for these levels.

The May 2, 1986 Federal Register (51 FR 16422) allows for clean closure with alternate concentration limits. In order to justify leaving greater than background concentrations in the soil, a health based risk assessment is required. The March 19, 1987 Federal Register lists some of the factors that must be considered in a proper risk assessment. USEPA's draft Surface Impoundment Clean Closure Guidance Manual (revised October 12, 1987) and the Superfund Public Health Evaluation Model (SPHEM) may offer some assistance in reviewing risk based clean levels. Alternate clean levels must be protective of public health and the environment, making it difficult to justify any further degradation of surface or ground water.

One recent publication, "Environmental Sampling for Hazardous Wastes" [Schweitzer, G.E. and J.A. Santolucito (eds.). 1984. ACS Symposium Series No. 267, American Chemical Society, Washington, D.C.], provides an overview of field sampling programs.

Underground tanks containing hazardous waste should be removed and underlying soil should be sampled for hazardous waste constituents that were in the tank.

12. DESCRIPTION OF REMOVAL EFFORTS - Any project which is attempting to close "clean" must fully describe each step in removing waste and contaminated soil from the property. This includes description of solidification/stabilization, stockpiling of waste or reagents, equipment, removal pattern and depth increments, loading areas or any other step critical to removal. The plan should clearly define how soil will be removed, stored, loaded and managed once it leaves the property.

Facilities where solidification or stabilization of waste is proposed should fully describe the procedure and its quality control.

In addition, efforts to minimize air emissions, including volatiles and dust, should be described when applicable.

13. SPECIFICS FOR LANDFILL CLOSURES - Any unit where waste is to left in place, including landfills and surface impoundments to be closed as landfills, obviously has several additional important considerations beyond that required for a "clean" closure. These include liners, caps, final cover, vegetation, groundwater monitoring and post-closure care and permit requirements. The checklist in Appendix A provides some further guidance.

Full descriptions, detailed engineering drawings and a construction quality assurance plan will be required for each unit undergoing closure. Caps, liners, cover, final contours and other relevant structures must meet the minimum criteria specified in "Minimum Technology Guidance on Final Covers for Landfills and Surface Impoundments." The construction quality assurance program should be consistent with USEPA's "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities." Engineering drawings with construction details must be provided in a closure plan.

Note that there are several additional regulatory requirements for closed disposal units in OAC 3745-55-17 through 20, OAC 3745-66-17 through 20, 40 CFR 264.117 through 120, and 40 CFR 265.117 through 120. These requirements concern post-closure plans, post-closure care, notice to local land authority, and notice in deed to property.

(Further detail on these types of closures to be provided at a later date).

14. DESCRIPTION OF EQUIPMENT CLEANING - Any equipment, including heavy earth-movers or smaller tools, should be scraped and washed to remove waste residues. The residues should be managed as hazardous waste, and this cleaning and management should be described in the closure plan. The operation should also be managed so that vehicles do not distribute waste residues on their tires outside of the waste management area.

15. CERTIFICATION - All partial or full closures of hazardous waste management units must be certified by both the owner/operator and an independent registered professional engineer (see OAC 3745-55-15, OAC 3745-66-15, 40 CFR 264.115 and 40 CFR 265.115). The closure plan must include a statement acknowledging this requirement. Certifications must be submitted within 60 days of completion of closure. The owner/operator's and independent registered professional engineer's certifications of closure must follow the signature requirements found in OAC 3745-50-42. The owner/operator certification statement must include the exact wording found in OAC 3745-50-42(D).

In addition, efforts to minimize air emissions, including volatiles and dust, should be described when applicable.

SPECIFICS FOR LANDFILL CLOSURES - Any unit where waste is left in place, including landfills and surface impoundments to be closed as landfills, obviously has several additional important considerations beyond that required for a "clean" closure. These include liners, caps, final cover, vegetation, groundwater monitoring and post-closure care and permit requirements. The checklist in Appendix A provides some further guidance.

Full descriptions, detailed engineering drawings and a construction quality assurance plan will be required for each unit undergoing closure. Caps, liners, cover, final contours and other relevant structures must meet the minimum criteria specified in "Minimum Technology Guidance on Final Covers for Landfills and Surface Impoundments." The construction quality assurance program should be consistent with USEPA's "Construction Quality Assurance for Hazardous Waste Land Disposal Facilities." Engineering drawings with construction details must be provided in a closure plan.

Note that there are several additional regulatory requirements for closed disposal units in OAC 3745-55-17 through 20, OAC 3745-66-17 through 20, 40 CFR 264.117 through 120, and 40 CFR 265.117 through 120. These requirements concern post-closure plans, post-closure care, notice to local land authority, and notice in deed to property.

(Further detail on these types of closures to be provided at a later date).

4. DESCRIPTION OF EQUIPMENT CLEANING - Any equipment, including heavy earth-movers or smaller tools, should be scraped and washed to remove waste residues. The residues should be managed as hazardous waste, and this cleaning and management should be described in the closure plan. The operation should also be managed so that vehicles do not distribute waste residues on their tires outside of the waste management area.
15. CERTIFICATION - All partial or full closures of hazardous waste management units must be certified by both the owner/operator and an independent registered professional engineer (see OAC 3745-55-15, OAC 3745-66-15, 40 CFR 264.115 and 40 CFR 265.115). The closure plan must include a statement acknowledging this requirement. Certifications must be submitted within 60 days of completion of closure. The owner/operator's and independent registered professional engineer's certifications of closure must follow the signature requirements found in OAC 3745-50-42. The owner/operator certification statement must include the exact wording found in OAC 3745-50-42(D).

ATTACHMENT A

OSWER Policy Directive #9476.00-5

**RCRA GUIDANCE MANUAL
FOR
SUBPART G CLOSURE AND
POST-CLOSURE CARE STANDARDS AND
SUBPART H COST ESTIMATING REQUIREMENTS**

**Prepared by
ICF Incorporated
for
Permits Branch, Office of Solid Waste
U.S. Environmental Protection Agency**

EPA/530-SW-87-010

January 1987

CLOSURE, CONTINGENT CLOSURE, AND POST-CLOSURE PLAN CHECKLISTS

This appendix contains checklists which identify the necessary types of information that should be addressed in a closure or post-closure plan. A closure plan checklist is provided for seven major types of hazardous waste management units:

- Container Storage and Handling Units;
- Tank Storage and Treatment Systems;
- Surface Impoundments;
- Waste Piles;
- Land Treatment;
- Landfills; and
- Incineration Systems.

Also included is a checklist identifying the activities to be included in a contingent closure plan required for permitted surface impoundments and waste piles that do not satisfy the specified liner requirements, and for permitted and interim status tank systems without secondary containment (see Section 2.1.3 of the main text). In addition, a post-closure plan checklist applicable to all facilities with disposal units is provided.

This appendix does not include checklists for miscellaneous hazardous waste technologies, such as placement of wastes in underground mines, thermal treatment other than incinerators (e.g., molten-salt pyrolysis, wet-air oxidation), open burning/open detonation of explosive wastes, certain chemical, physical, and biological treatment units, some water disposal activities, and research in miscellaneous units. These checklists may be provided at a later date as updates to this guidance manual.

The purpose of the checklists is to indicate the types of information to be included in a plan and to present a suggested format for organizing the information. The checklists also include the applicable regulatory citations for reference. The closure plan checklists are organized into three major sections:

- Facility Description -- Discusses design and operating information about the unit and the relationship of the unit to other hazardous waste management units, if any, at the facility to provide a basis for discussions of closure procedures;¹

¹ Where a Part B permit application has been submitted for the unit, much if not all of the information listed under Facility Description will have been presented in the application. The closure plan need only reference the appropriate sections of the Part B application where this information is to be found.

- Closure Procedures -- Describes the steps necessary to perform closure of the unit; and
- Closure Schedule -- Presents timing and scheduling information for all of the partial and final closure activities.

The suggested format for the post-closure plan checklist conforms to the key post-closure care activities, namely monitoring and routine maintenance activities.

Each checklist is designed to address all the possible types of information that may be necessary to include in a plan for that specific process type unit. Because site-specific conditions play a considerable role in shaping closure and post-closure plans, not all items on the checklist may be applicable to a particular unit or facility. For example, if all waste inventory from the closure of a tank storage system is to be sent off site for disposal, there will be no need to describe on-site treatment or disposal methods for these wastes. Similarly, if it can be demonstrated that there will always be sufficient capacity available in an operating landfill cell to dispose of waste inventory at any time during the active life of the facility, then there will be no need to provide information on the design and construction of a new cell.

For the convenience of the checklist user, each item on the checklist includes a space to note whether the specific information is provided in the plan or is "not applicable". In addition, it includes a corresponding space on the page to accommodate a brief written comment or note explaining why certain information is not applicable. This information may help to serve as an outline in preparing the closure plan, as well as a management tool for reviewing the plans.

In preparing or reviewing a closure plan for a multiple process facility, the user should refer to each of the applicable process-specific checklists. For example, for a facility comprised of container storage and handling units, tank treatment, and landfills, all three checklists should be used. Because the checklists address activities on a per-unit basis, the landfill checklist, for example, does not address the procedures for removing and handling the waste inventory associated with the treatment tank system. In preparing the closure plan, however, the owner or operator may choose to describe certain closure activities on a per-facility basis (see Section 2.2 of the main text).

CLOSURE PLAN CHECKLIST:

CONTAINER STORAGE AND HANDLING UNITS

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**CLOSURE PLAN CHECKLIST
CONTAINER STORAGE AND HANDLING UNITS**

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. FACILITY DESCRIPTION	264.111/265.111			
1.1 General description (e.g., size, location)				
1.2 Topographic map				
1.3 List of other HWM units and wastes handled in each				
1.4 Hydrogeologic information:				
o Ground-water and soil conditions				
o Ground-water monitoring systems				
o Corrective actions				
1.5 Container storage unit description:				
o Wastes managed (EPA hazardous waste numbers & quantities)				
o Capacity: number and size of containers				
o Storage area design & ancillary equipment (including layout sketch)				
o Secondary containment design				
1.6 References to other environmental permits (NPDES, UIC, TSCA)				
1.7 Anticipated waivers or exemptions				
2. CLOSURE PROCEDURES				
2.1 Estimates of maximum quantity of inventory (by waste type) to be removed:	264.112(b)(3)/265.112(b)(3); 264.178			
o Containers				
o Bulk wastes				
o Residues				
o Empty containers				

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**CLOSURE PLAN CHECKLIST
CONTAINER STORAGE AND HANDLING UNITS**

SUBJECT REQUIREMENT	PART 264/265	NOT		COMMENTS
		PROVIDED	APPLICABLE	
2.2 Procedures for handling removed inventory (address quantities, waste types, methods):	264.112(b)(3)/265.112(b)(3); 264.178			
o On-site treatment				
o On-site disposal				
o Transportation distance off-site				
o Off-site treatment				
o Off-site disposal				
2.3 Procedures for decontamination and/or disposal:	264.112(b)(4)/265.112(b)(4); 264.114/265.114; 264.178			
o Equipment/structures decontamination (address sampling protocol)				
o Cleaning agent/rinsewater treatment or disposal (address quantities, waste types, and methods):				
-- On-site treatment/disposal				
-- Off-site treatment/disposal				
o Equipment/structures demolition and removal (address quantities and methods):				
-- On-site treatment/disposal				
-- Off-site treatment/disposal				
o Contaminated soil removal:				
-- List or sketch of potentially contaminated areas				
-- Estimated amount of contaminated soil to be removed (address sampling protocol)				
-- Soil removal methods				
-- On-site disposal				
-- Off-site disposal				

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#9476.00-5

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**CLOSURE PLAN CHECKLIST
CONTAINER STORAGE AND HANDLING UNITS**

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
2.4 Description of security systems:	264.14(b) and (c)/ 265.14(b) and (c)			
o Posted signs and 24-hour surveillance system				
o fence or natural barrier				
2.5 Closure certification:	264.115/265.115			
o Activities to be conducted				
o Testing and analyses to be performed				
o Criteria for evaluating adequacy				
o Schedule of inspections				
o Types of documentation				
3. <u>CLOSURE SCHEDULE</u>	264.112(b)(6)/265.112(b)(6)			
3.1 Expected year of closure	264.112(b)(7)/265.112(b)(7)			
3.2 Frequency of partial closures				
3.3 Milestone chart showing time for:				
o Removal, treatment or disposal of inventory	264.113(a)/265.113(a)			
o Decontamination equipment/structures				
o Equipment, structures demolition and soil removal/disposal				
o Total time to close	264.113(b)/265.113(b)			
3.4 Request for extension to deadlines for handling inventory or completing closure	264.113(c)/265.113(c)			

CLOSURE PLAN CHECKLIST:

TANK STORAGE AND TREATMENT SYSTEMS

**CLOSURE PLAN CHECKLIST
TANK STORAGE AND TREATMENT SYSTEMS***

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. FACILITY DESCRIPTION	264.111/265.111			
1.1 General description (e.g., size, location)				
1.2 Topographic map				
1.3 List of other HWM units and wastes handled in each				
1.4 Hydrogeologic information:				
o Ground-water and soil conditions				
o Ground-water monitoring systems				
o Corrective actions				
1.5 Tank system description:				
o Wastes managed (EPA hazardous waste numbers & quantities)				
o Capacity: type, number and size of tanks				
o Tank area design & ancillary equipment (including layout sketch)				
o Secondary containment and leak detection system design				
1.6 References to other environmental permits (NPDES, UIC, TSCA)				
1.7 Anticipated waivers or exemptions				
2. CLOSURE PROCEDURES				
2.1 Estimates of maximum quantity of inventory (by waste type) to be removed:	264.112(b)(3)/265.112(b)(3); 264.197/265.197			
o Pumpable wastes in tanks				
o Residues in tanks				
o Contaminated containment liquids				

* See also Contingent Closure Plan Checklist for tank systems without secondary containment.

**CLOSURE PLAN CHECKLIST
TANK STORAGE AND TREATMENT SYSTEMS***

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
2.2 Procedures for handling removed inventory (address quantities, waste types, methods):	264.112(b)(3)/265.112(b)(3); 264.197(a)/265.197(a)			
o On-site treatment				
o On-site disposal				
o Transportation distance off-site				
o Off-site treatment				
o Off-site disposal				
2.3 Procedures for decontamination and/or disposal:	264.112(b)(4)/265.112(b)(4); 264.114/265.114; 264.197/ 265.197			
o Tanks and other equipment/structures decontamination (address sampling protocol)				
o Cleaning agent/rinsewater treatment or disposal (address quantities, waste types, and methods):				
-- On-site treatment/disposal				
-- Off-site treatment/disposal				
o Tanks and other equipment/structures demolition and removal (address quantities and methods):				
-- On-site treatment/disposal				
-- Off-site treatment/disposal				
o Contaminated soil removal:				
-- List or sketch of potentially contaminated areas				
-- Estimated amount of contaminated soil to be removed (address sampling protocol)				
-- Soil removal methods				
-- On-site disposal				
-- Off-site disposal				

* See also Contingent Closure Plan Checklist for tank systems without secondary containment.

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**CLOSURE PLAN CHECKLIST
TANK STORAGE AND TREATMENT SYSTEMS***

=====		=====		
SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
=====		=====		
2.4 Description of security systems:	264.14(b) and (c)/ 265.14(b) and (c)			
o Posted signs and 24-hour surveillance system		_____	_____	_____
o Fence or natural barrier		_____	_____	_____
2.5 Closure certification:	264.115/265.115			
o Activities to be conducted		_____	_____	_____
o Testing and analyses to be performed		_____	_____	_____
o Criteria for evaluating adequacy		_____	_____	_____
o Schedule of inspections		_____	_____	_____
o Types of documentation		_____	_____	_____
3. <u>CLOSURE SCHEDULE</u>	264.112(b)(6)/265.112(b)(6)			
3.1 Expected year of closure	264.112(b)(7)/265.112(b)(7)	_____	_____	_____
3.2 Frequency of partial closures		_____	_____	_____
3.3 Milestone chart showing time for:				
o Removal, treatment or disposal of inventory	264.113(a)/265.113(a)	_____	_____	_____
o Decontamination of tanks and equipment/structures		_____	_____	_____
o Tanks, equipment, and structures demolition and soil removal/disposal		_____	_____	_____
o Total time to close	264.113(b)/265.113(b)	_____	_____	_____
3.4 Request for extension to deadlines for handling inventory or completing closure	264.113(c)/265.113(c)	_____	_____	_____
=====		=====		

* See also Contingent Closure Plan Checklist for tank systems without secondary containment.

CLOSURE PLAN CHECKLIST:

SURFACE IMPOUNDMENTS AT WHICH ALL WASTES ARE REMOVED

**CLOSURE PLAN CHECKLIST
SURFACE IMPOUNDMENTS: ALL HAZARDOUS WASTES REMOVED***

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. FACILITY DESCRIPTION	264.111/265.111			
1.1 General description (e.g., size, location)				
1.2 Topographic map				
1.3 List of other HWM units and wastes handled in each				
1.4 Hydrogeologic information:				
o Ground-water and soil conditions				
o Ground-water monitoring systems				
o Corrective actions				
1.5 Surface impoundments description:				
o Wastes managed (EPA hazardous waste numbers and quantities)				
o Number and size (serial dimensions and depth) of impoundments (including engineering drawings)				
o Liner systems and leachate collection systems design				
o Run-on and run-off control systems				
1.6 References to other environmental permits (NPDES, UIC, TSCA)				
1.7 Anticipated waivers or exemptions				
2. CLOSURE PROCEDURES				
2.1 Estimates of maximum quantity of inventory (by waste type) to be removed:	264.112(b)(3)/265.112(b)(3); 264.228(a)/265.228(a)			
o Pumpable wastes in the impoundments				
o Bottom sludges/residues in the impoundments				
2.2 Procedures for handling removed inventory (address quantities, waste types, methods):	264.112(b)(3)/265.112(b)(3); 264.228(a)/265.228			

* See also Contingent Closure Plan Checklist for permitted impoundments without liner systems as specified in Section 264.221(a) (i.e., double liners)

EPA I.D. _____

CLOSURE PLAN CHECKLIST
SURFACE IMPOUNDMENTS: ALL HAZARDOUS WASTES REMOVED*

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
o On-site treatment		_____	_____	_____
o On-site disposal		_____	_____	_____
o Transportation distance off-site		_____	_____	_____
o Off-site treatment		_____	_____	_____
o Off-site disposal		_____	_____	_____
2.3 Procedures for decontamination and/or disposal:	264.112(b)(4)/265.112(b)(4); 264.114/265.114; 264.228(a)/ 265.228(a)			
o Equipment/structures (piping, pumps) decontamination (address sampling protocol)		_____	_____	_____
o Cleaning agent/rinsewater treatment or disposal (address quantities, waste types, and methods):				
-- On-site treatment/disposal		_____	_____	_____
-- Off-site treatment/disposal		_____	_____	_____
o Containment systems (liners, dikes) and other equipment/structures demolition and removal (address quantities and methods):				
-- On-site treatment/disposal		_____	_____	_____
-- Off-site treatment/disposal		_____	_____	_____
o Other contaminated soil removal:	264.228(a)/265.228(a)			
-- List or sketch of potentially contaminated areas		_____	_____	_____
-- Estimated amount of contaminated soil to be removed (address sampling protocol)		_____	_____	_____
-- Soil removal methods		_____	_____	_____
-- On-site disposal		_____	_____	_____
-- Off-site disposal		_____	_____	_____
o Protocol for determining "clean" closure		_____	_____	_____

* See also Contingent Closure Plan Checklist for permitted impoundments without liner systems as specified in Section 264.221(a) (1) double liners)

EPA I.D. _____

CLOSURE PLAN CHECKLIST
SURFACE IMPOUNDMENTS: ALL HAZARDOUS WASTES REMOVED*

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
2.4 Ground-water monitoring:	264.112(b)(5)/265.112(b)(5); 264.90/265.90			
o Number, location and frequency of samples				
o Procedures for analysis				
2.5 Description of security systems:	264.14(b) and (c)/ 265.14(b) and (c)			
o Posted signs and 24-hour surveillance system				
o Fence or natural barrier				
2.6 Closure certification:	264.115/265.115			
o Activities to be conducted				
o Testing and analyses to be performed				
o Criteria for evaluating adequacy				
o Schedule of inspections				
o Types of documentation				
3. <u>CLOSURE SCHEDULE</u>	264.112(b)(6)/265.112(b)(6)			
3.1 Expected year of closure	264.112(b)(7)/265.112(b)(7)			
3.2 Frequency of partial closures				
3.3 Milestone chart showing time for:				
o Removal, treatment or disposal of inventory	264.113(a)/265.113(a)			
o Decontamination of equipment/structures				
o Containment systems, equipment, and structures demolition and soil removal/disposal				
o Total time to close	264.113(b)/265.113(b)			
3.4 Request for extension to deadlines for handling inventory or completing closure	264.113(c)/265.113(c)			

* See also Contingent Closure Plan Checklist for permitted impoundments without liner systems as specified in Section 264.221(a) (i.e., double liners)

CLOSURE PLAN CHECKLIST:

DISPOSAL SURFACE IMPOUNDMENTS

EPA I.D. _____

**CLOSURE PLAN CHECKLIST
SURFACE IMPOUNDMENTS: CLOSURE AS A LANDFILL**

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. FACILITY DESCRIPTION	264.111/265.111			
1.1 General description (e.g., size, location)				
1.2 Topographic map				
1.3 List of other HWM units and wastes handled in each				
1.4 Hydrogeologic information:				
o Ground-water, soil, and geologic conditions				
o Ground-water monitoring systems				
o Corrective actions				
1.5 Surface impoundment description:				
o Wastes managed (EPA hazardous waste numbers & quantities)				
o Number and size (aerial dimensions and depth) of impoundments (including engineering drawings)				
o Liner systems and leachate collection systems design				
o Run-on and run-off control systems				
1.6 References to other environmental permits (NPDES, UIC, TSCA)				
1.7 Anticipated waivers or exemptions				
2. CLOSURE PROCEDURES				
2.1 Estimates of maximum quantity of inventory (by waste type) to be removed:	264.112(b)(3)/265.112(b)(3); 264.228(a)/265.228(c)			
o Pumpable wastes in the impoundments				
o Bottom sludges/residues in the impoundments				
2.2 Procedures for handling inventory to be treated/stabilized and replaced in the impoundments (consistent with land disposal restrictions under Part 268):	264.228(a)(2)/265.228(c)			

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CLOSURE PLAN CHECKLIST
SURFACE IMPOUNDMENTS: CLOSURE AS A LANDFILL

=====		=====		
SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
=====		=====		
o Waste types and quantities		_____	_____	_____
o Treatment methods		_____	_____	_____
o Type and amount of stabilization reagent		_____	_____	_____
2.3 Procedures for handling other removed inventory (address quantities, waste types, methods)	264.112(b)(3)/265.112(b)(3); 264.228/265.228			
o On-site treatment		_____	_____	_____
o On-site disposal		_____	_____	_____
o Transportation distance off-site		_____	_____	_____
o Off-site treatment		_____	_____	_____
o Off-site disposal		_____	_____	_____
2.4 Procedures for decontamination and/or disposal:	264.112(b)(4)/265.112(b)(4); 264.114/265.114; 264.228/ 265.228			
o Equipment/structures (piping, pumps) decontamination (address sampling protocol)		_____	_____	_____
o Cleaning agent/rinsewater treatment or disposal (address quantities, waste types, and methods):				
-- On-site treatment/disposal		_____	_____	_____
-- Off-site treatment/disposal		_____	_____	_____
o Equipment/structures demolition and removal (address quantities and methods):				
-- On-site treatment/disposal		_____	_____	_____
-- Off-site treatment/disposal		_____	_____	_____
o Contaminated soil removal:				
-- List or sketch of potentially contaminated areas		_____	_____	_____
-- Estimated amount of contaminated soil to be removed (address sampling protocol)		_____	_____	_____
=====		=====		

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**CLOSURE PLAN CHECKLIST
SURFACE IMPOUNDMENTS: CLOSURE AS A LANDFILL**

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
-- Soil removal methods		_____	_____	_____
-- On-site disposal		_____	_____	_____
-- Off-site disposal		_____	_____	_____
2.5 Final cover design (including engineering drawings):	264.228(a)(2)/265.228(c)			
o Area covered		_____	_____	_____
o Cover characteristics:				
-- Material type		_____	_____	_____
-- Permeability		_____	_____	_____
-- Depth		_____	_____	_____
-- Slope		_____	_____	_____
-- Drainage structures		_____	_____	_____
-- Vegetation		_____	_____	_____
o Installation procedures (equipment and labor requirements)		_____	_____	_____
2.6 Ground-water monitoring:	264.112(b)(5)/265.112(b)(5); 264.90/265.90			
o Types of analyses:				
-- Number, location, and frequency		_____	_____	_____
-- Procedures for analyses		_____	_____	_____
o Maintenance of equipment		_____	_____	_____
2.7 Description of security systems	264.14(b) and (c)/ 265.14(b) and (c)			
o Existing facility fence maintenance		_____	_____	_____
o Additional fencing at closure		_____	_____	_____
o Other security equipment		_____	_____	_____
2.8 Survey plat	264.116/265.116	_____	_____	_____
2.9 Closure certification:	264.115/265.115			
o Activities to be conducted		_____	_____	_____

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**CLOSURE PLAN CHECKLIST
SURFACE IMPOUNDMENTS: CLOSURE AS A LANDFILL**

SUBJECT REQUIREMENT	PART 264/265	NOT		COMMENTS
		PROVIDED	APPLICABLE	
o Testing and analyses to be performed		_____	_____	_____
o Criteria for evaluating adequacy		_____	_____	_____
o Schedule of inspections		_____	_____	_____
o Types of documentation		_____	_____	_____
3. CLOSURE SCHEDULE	264.112(b)(6)/265.112(b)(6)			
3.1 Estimated year of closure	264.112(b)(7)/265.112(b)(7)	_____	_____	_____
3.2 Frequency of partial closures		_____	_____	_____
3.3 Milestone chart showing time for:				
o Removal, treatment, disposal of inventory	264.113(a)/265.113(a)	_____	_____	_____
o Decontamination of equipment/ structures and soil removal/ disposal		_____	_____	_____
o Closure cover installation		_____	_____	_____
o Total time to close	264.113(b)/265.113(b)	_____	_____	_____
3.4 Request for extension to deadlines for handling inventory or completing closure	264.113(c)/265.113(c)	_____	_____	_____

CLOSURE PLAN CHECKLIST:

WASTE PILES

CLOSURE PLAN CHECKLIST
WASTE PILES*

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. FACILITY DESCRIPTION	264.111/265.111			
1.1 General description (e.g., size, location)				
1.2 Topographic map				
1.3 List of other HWM units and wastes handled in each				
1.4 Hydrogeologic information:				
o Ground-water and soil conditions				
o Ground-water monitoring systems				
o Corrective actions				
1.5 Waste piles description:				
o Wastes managed (EPA hazardous waste numbers & quantities)				
o Number and size of waste piles				
o Roof area and containment system design (including engineering drawings)				
o Liner system and leachate collection system design				
o Run-on and run-off control system				
1.6 References to other environmental permits (NPDES, UIC, TSCA)				
1.7 Anticipated waivers or exemptions				
2. CLOSURE PROCEDURES				
2.1 Estimates of maximum quantity of inventory (by waste type) to be removed:	264.112(b)(3)/265.112(b)(3); 264.250(a)/265.250(a)			
o Wastes in piles				
o Leachates				
o Contaminated containment liquids				

* See also Contingent Closure Plan Checklist for permitted waste piles without liner systems as specified in Section 264.251(a) (i.e., single liner)

EPA I.D. _____

CLOSURE PLAN CHECKLIST
WASTE PILES*

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
2.2 Procedures for handling removed inventory (address quantities, waste types, methods):	264.112(b)(3)/265.112(b)(3); 264.258(a)/265.258(a)			
o On-site treatment				
o On-site disposal				
o Transportation distance off-site				
o Off-site treatment				
o Off-site disposal				
2.3 Procedures for decontamination and/or disposal:	264.112(b)(4)/265.112(b)(4); 264.114/265.114; 264.258/ 265.258			
o Pile base and other equipment/ structures decontamination (address sampling protocol)				
o Cleaning agent/rinsewater treatment or disposal (address quantities, waste types, and methods):				
-- On-site treatment/disposal				
-- Off-site treatment/disposal				
o Pile base and other equipment/ structures demolition and removal (address quantities and methods):				
-- On-site treatment/disposal				
-- Off-site treatment/disposal				
o Contaminated soil removal:				
-- List or sketch of potentially contaminated areas				
-- Estimated amount of contaminated soil to be removed (address sampling protocol)				
-- Soil removal methods				
-- On-site disposal				
-- Off-site disposal				

* See also Contingent Closure Plan Checklist for permitted waste piles without liner systems as specified in Section 264.251(a) (i.e. single liner)

EPA I.D. _____

**CLOSURE PLAN CHECKLIST
WASTE PILES***

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
2.4 Leachate management:	264.112(b)(5)/265.112(b)(5)			
o Estimate of volumes collected				
o Treatment and disposal methods:				
-- On-site				
-- Off-site				
2.5 Ground-water monitoring:	264.112(b)(5)/265.112(b)(5); 264.90; 264.250(c)			
o Number, location and frequency of samples				
o Procedures for analyses				
2.6 Description of security systems:	264.14(b) and (c)/ 265.14(b) and (c)			
o Posted signs and 24-hour surveillance system				
o Fence or natural barrier				
2.7 Closure certification:	264.115/265.115			
o Activities to be conducted				
o Testing and analyses to be performed				
o Criteria for evaluating adequacy				
o Schedule of inspections				
o Types of documentation				
3. <u>CLOSURE SCHEDULE</u>	264.112(b)(6)/265.112(b)(6)			
3.1 Expected year of closure	264.112(b)(7)/265.112(b)(7)			
3.2 Frequency of partial closures				
3.3 Milestone chart showing time for:				
o Removal, treatment or disposal of inventory	264.113(a)/265.113(a)			
o Decontamination of pile base and equipment/structures				

* See also Contingent Closure Plan Checklist for permitted waste piles without liner systems as specified in Section 264.251(a) (i.e., single liner)

EPA I.D. _____

CLOSURE PLAN CHECKLIST
WASTE PILES*

SUBJECT REQUIREMENT	PART 264/265	NOT		COMMENTS
		PROVIDED	APPLICABLE	
o Pile base, equipment, and structures demolition and soil removal/disposal		_____	_____	_____
o Total time to close	264.113(b)/265.113(b)	_____	_____	_____
3.4 Request for extension to deadlines for handling inventory or completing closure	264.113(c)/265.113(c)	_____	_____	_____

* See also Contingent Closure Plan Checklist for permitted waste piles without liner systems as specified in Section 264.251(a) (i.e., single liner)

CLOSURE PLAN CHECKLIST:

LAND TREATMENT

CLOSURE PLAN CHECKLIST
LAND TREATMENT

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. FACILITY DESCRIPTION	264.111/265.111			
1.1 General description (e.g., size, location)				
1.2 Topographic map				
1.3 List of other HWM units and wastes handled in each				
1.4 Hydrogeologic information:				
o Ground-water, soil, and geologic conditions				
o Ground-water monitoring systems				
o Corrective actions				
1.5 Land treatment system description:				
o Wastes managed (EPA hazardous waste numbers & quantities)				
o Number, size (aerial dimensions and depth), and capacity of each land treatment zone (including engineering drawings)				
o Application rates				
o Run-on and run-off control systems				
1.6 References to other environmental permits (NPDES, UIC, TSCA)				
1.7 Anticipated waivers or exemptions				
2. CLOSURE PROCEDURES				
2.1 Estimates of maximum quantity of inventory by waste type:	264.112(b)(3)/265.112(b)(3)			
o Wastes to be spread at closure				
o Run-off from land treatment fields				
2.2 Procedures for disposing of inventory and other wastes:	264.112(b)(3)/265.112(b)(3); 264.280/265.280			
o Procedures for landspreading wastes:				

**CLOSURE PLAN CHECKLIST
LAND TREATMENT**

EPA I.D. _____

=====		=====		
SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
=====		=====		
-- Landspreading management procedures		_____	_____	_____
-- Application rates		_____	_____	_____
-- Acreage required		_____	_____	_____
o Procedures for handling other waste inventory and run-on/run-off (address quantities, types, and methods):				
-- On-site		_____	_____	_____
-- Off-site		_____	_____	_____
o Procedures for decontamination and/or disposal:	264.112(b)(4)/265.112(b)(4); 264.114/265.114			
-- Equipment/structure decontamination		_____	_____	_____
-- Cleaning agent rinsewater/treatment or disposal (address, quantities, and methods such as on-site or off-site)		_____	_____	_____
-- Equipment/structures demolition (address, quantities, and methods such as on-site or off-site)		_____	_____	_____
2.3 Procedures to continue land treatment processes:	264.260/265.260			
o Activities to be conducted during closure (disking, liming, irrigation)		_____	_____	_____
o Procedures for controlling wind dispersal		_____	_____	_____
2.4 Procedures for contaminated soil removal:				
o List or sketch of potentially contaminated areas		_____	_____	_____
o Estimated amount of contaminated soil to be removed		_____	_____	_____
o Soil removal methods		_____	_____	_____
=====		=====		

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CLOSURE PLAN CHECKLIST
LAND TREATMENT

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
o On-site disposal				
o Off-site disposal				
2.5 Procedures for compliance with food-chain crop prohibitions	264.280(a)/265.280(a)			
o Type of crop				
o Analyses to be conducted				
2.6 Vegetative cover design (including engineering drawings):	264.280(a)/265.280(c)			
o Area covered				
o Vegetation characteristics:				
-- Name				
-- Environmental requirements				
o Soil preparation				
2.7 Soil monitoring	264.280(a)(7)/265.280(d)			
o Types of monitoring (soil sampling, soil-pore liquid sampling)				
o Frequency analyses conducted				
2.8 Ground-water monitoring:	264.112(b)(5)/265.112(b)(5); 264.90/265.90;265.280(c)			
o Types of analyses:				
-- Number, location, and frequency				
-- Procedures for analyses				
o Maintenance of equipment				
2.9 Description of security systems	264.14(b) and (c)/ 265.14(b) and (c)			
o Existing facility fence maintenance				
o Additional fencing at closure				
o Other security equipment				
2.10 Survey plat	264.116/265.116			

**CLOSURE PLAN CHECKLIST
LAND TREATMENT**

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	NOT		COMMENTS
		PROVIDED	APPLICABLE	
2.11 Closure certification:	264.115/265.115			
o Activities to be conducted				
o Testing and analyses to be performed				
o Criteria for evaluating adequacy				
o Schedule of inspections				
o Types of documentation				
3. <u>CLOSURE SCHEDULE</u>	264.112(b)(6)/265.112(b)(6)			
3.1 Estimated year of closure	264.112(b)(7)/265.112(b)(7)			
3.2 Frequency of partial closures				
3.3 Milestones chart showing time for:				
o Landspreading wastes				
o Other waste disposal	264.113(a)/265.113(a)			
o Continued waste degradation				
o Vegetative cover installation				
o Total time to close	264.113(b)/265.113(b)			
3.4 Request for extension to deadlines for handling inventory or completing closure	264.113(c)/265.113(c)			

CLOSURE PLAN CHECKLIST:

LANDFILLS

**CLOSURE PLAN CHECKLIST
LANDFILLS**

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. FACILITY DESCRIPTION	264.111/265.111			
1.1 General description (e.g., size, location)				
1.2 Topographic map				
1.3 List of other HMM units and wastes handled in each				
1.4 Hydrogeologic information:				
o Ground-water, soil, and geologic conditions				
o Ground-water monitoring systems				
o Corrective actions				
1.5 Landfill description:				
o Wastes managed (EPA hazardous waste numbers & quantities)				
o Size (aerial dimensions & depth)				
o Number of landfill trenches or cells (including engineering drawings)				
o Maximum number and size of trenches or cells ever open at any time (existing or proposed)				
o Liner systems				
o Leachate collection systems				
o Run-on and run-off control systems				
1.6 References to other environmental permits (NPDES, UIC, TSCA)				
1.7 Anticipated waivers or exemptions				
2. CLOSURE PROCEDURES				
2.1 Estimates of maximum quantity of inventory by waste type to be landfilled (consistent with land disposal restrictions under Part 268):	264.112(b)(3)/265.112(b)(3)			

CLOSURE PLAN CHECKLIST
LANDFILLS

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
o Containerized wastes				
o Bulk wastes				
o Decontamination wastes				
o Demolition wastes				
o Contaminated soil (from other activities)				
2.2 Procedures for disposing of inventory and other wastes:	264.112(b)(3)/ 265.112(b)(3)			
o Closure cell construction (including engineering drawings):				
-- Trench excavation & liner installation				
-- Leachate system installation				
-- Run-on and run-off control system				
-- Ground-water monitoring system				
o Procedures for landfilling wastes:				
-- Equipment to be used				
-- Special requirements for incompatible, ignitable, or reactive wastes				
-- Soil, other material, and labor requirements				
o Procedures for decontamination and/or disposal:				
-- Equipment/structure decontamination				
-- Cleaning agent rinsewater/treatment or disposal (address, quantities, and methods such as on-site or off-site)				
-- Equipment/structures demolition (address, quantities, and methods such as on-site or off-site)				

CLOSURE PLAN CHECKLIST
LANDFILLS

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
o Procedures for contaminated soil removal and disposal (landfilling activities):				
-- List or sketch of potentially contaminated areas				
-- Criteria for determining contamination				
-- Estimated amount of contaminated soil to be removed				
o Procedures for managing incident precipitation:				
-- Amount to be removed from cell and method of treatment/disposal				
-- Amount to be managed via leachate system (after closure)				
2.3 Final cover design (including engineering drawings):	264.310/265.310			
o Area covered				
o Cover characteristics:				
-- Material type				
-- Permeability				
-- Depth				
-- Slope				
-- Drainage structures				
-- Vegetation				
o Installation procedures (equipment and labor requirements)				
2.4 Ground-water monitoring:	264.112(b)(5)/265.112(b)(5); 264.90/265.90			
o Types of analyses:				
-- Number, location, and frequency				
-- Procedures for analyses				
o Maintenance of equipment				

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CLOSURE PLAN CHECKLIST
LANDFILLS

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
2.5 Leachate management:	264.112(b)(5)/265.112(b)(5); 264.301(a)(2)			
o Estimate of volumes collected				
o Treatment and disposal methods:				
-- On-site				
-- Off-site				
2.6 Gas collection and control:	264.112(b)(5)/265.112(b)(5)			
o Well location and pipeline configuration				
o Gas processing facility				
2.7 Description of security systems:	264.14(b) and (c)/ 265.14(b) and (c)			
o Existing facility fence maintenance				
o Additional fencing at closure				
o Other security equipment				
2.8 Survey plat	264.116/265.116			
2.9 Closure certification:	264.115/265.115			
o Activities to be conducted				
o Testing and analyses to be performed				
o Criteria for evaluating adequacy				
o Schedule of inspections				
o Types of documentation				
3. CLOSURE SCHEDULE	264.112(b)(6)/265.112(b)(6)			
3.1 Estimated year of closure	264.112(b)(7)/265.112(b)(7)			
3.2 Frequency of partial closures				
3.3 Milestone chart showing time for:				
o Closure cell construction				
o Inventory disposal in landfill	264.113(a)/265.113(a)			

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CLOSURE PLAN CHECKLIST
LANDFILLS

=====		=====		
SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
=====		=====		
o Contaminated soil disposal		_____	_____	_____
o Closure cover installation		_____	_____	_____
o Waste disposal via other methods		_____	_____	_____
o Total time to close	264.113(b)/265.113(b)	_____	_____	_____
3.4 Request for extension to deadlines for handling inventory or completing closure	264.113(c)/265.113(c)	_____	_____	_____

CLOSURE PLAN CHECKLIST:

INCINERATION SYSTEMS

CLOSURE PLAN CHECKLIST
INCINERATION SYSTEMS

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. FACILITY DESCRIPTION	264.111/265.111			
1.1 General description (e.g., size, location)				
1.2 Topographic map				
1.3 List of other INM units and wastes handled in each				
1.4 Hydrogeologic information:				
o Ground-water and soil conditions				
o Ground-water monitoring systems				
o Corrective actions				
1.5 Incineration system description:				
o Overall system description (include layout sketch)				
o Wastes managed (EPA hazardous waste numbers and throughput) and chemical and physical characteristics of feed blends (e.g., caloric values, viscosities, chlorine concentration)				
o Combustion unit design type and capacity (i.e., rotary kiln)				
o Waste handling systems design (i.e., pumps, ram feeders)				
o Emission control system (i.e., gas conditioners, scrubbers, cyclones, baghouses, electrostatic precipitators)				
o Residuals handling system (i.e., ash conveyors, scrubber water treatment facilities)				
1.6 References to other environmental permits (NPDES, UIC, TSCA)				
1.7 Anticipated waivers or exemptions				

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CLOSURE PLAN CHECKLIST
INCINERATION SYSTEMS

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
2. CLOSURE PROCEDURES				
2.1 Estimates of maximum quantity of inventory (by waste type) to be removed:	264.112(b)(3)/265.112(b)(3)			
o Containerized wastes				
o Bulk liquid wastes				
o Bulk solid wastes				
o Incineration residuals (ash, scrubber effluents)				
2.2 Procedures for handling wastes to be incinerated on-site:	264.112(b)(3)/265.112(b)(3); 264.345/265.345			
o Quantities				
o Waste types				
o Operating conditions (address auxiliary fuel requirements, time to incinerate)				
o Monitoring and inspection activities	264.347/265.347			
2.3 Procedures for handling wastes not to be incinerated, including incinerator ash and scrubber effluents generated during closure (address quantities, types, and methods):				
o On-site treatment/disposal				
o Off-site transportation				
o Off-site treatment/disposal				
2.4 Procedures for decontamination and/or disposal:	264.112(b)(4)/265.112(b)(4); 264.351/265.351			
o Equipment/structures decontamination (address sampling protocol)				
o Cleaning agent/rinsewater treatment or disposal (address quantities, waste types, and methods):				
-- On-site treatment/disposal				

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CLOSURE PLAN CHECKLIST
INCINERATION SYSTEMS

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
-- Off-site treatment/disposal		_____	_____	_____
o Equipment/structures demolition and removal (address quantities and methods):		_____	_____	_____
-- On-site treatment/disposal		_____	_____	_____
-- Off-site treatment/disposal		_____	_____	_____
o Contaminated soil removal:		_____	_____	_____
-- List or sketch of potentially contaminated areas		_____	_____	_____
-- Estimated amount of contaminated soil to be removed (address sampling protocol)		_____	_____	_____
-- Soil removal methods		_____	_____	_____
-- On-site disposal		_____	_____	_____
-- Off-site disposal		_____	_____	_____
2.5 Description of security systems:	264.14(b) and (c)/ 265.14(b) and (c)	_____	_____	_____
o Posted signs and 24-hour surveillance system		_____	_____	_____
o Fence or natural barrier		_____	_____	_____
2.6 Closure certification:	264.115/265.115	_____	_____	_____
o Activities to be conducted		_____	_____	_____
o Testing and analyses to be performed		_____	_____	_____
o Criteria for evaluating adequacy		_____	_____	_____
o Schedule of inspections		_____	_____	_____
o Types of documentation		_____	_____	_____
3. CLOSURE SCHEDULE	264.112(b)(6)/265.112(b)(6)	_____	_____	_____
3.1 Estimated year of closure	264.112(b)(7)/265.112(b)(7)	_____	_____	_____
3.2 Frequency of partial closures		_____	_____	_____

EPA I.D. _____

**CLOSURE PLAN CHECKLIST
INCINERATION SYSTEMS**

=====		=====		
SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
=====				
3.3 Milestones chart showing time for:				
o Incineration or removal, treatment and disposal of inventory (and incineration residuals)	264.113(a)/265.113(a)	_____	_____	_____
o Decontamination equipment/structures		_____	_____	_____
o Equipment, structures demolition and soil removal/disposal		_____	_____	_____
o Total time to close	264.113(b)/265.113(b)	_____	_____	_____
3.4 Request for extension to deadlines for handling inventory or completing closure	264.113(c)/265.113(c)	_____	_____	_____

CONTINGENT CLOSURE PLAN CHECKLIST:

**CERTAIN TANK SYSTEMS, WASTE PILES, AND
SURFACE IMPOUNDMENTS**

**CONTINGENT CLOSURE PLAN CHECKLIST
CERTAIN TANK SYSTEMS, WASTE PILES, SURFACE IMPOUNDMENTS**

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. CLOSURE PROCEDURES				
1.1 Final cover design (including engineering drawings):	264.310/265.310			
o Area covered				
o Cover characteristics:				
-- Material type				
-- Permeability				
-- Depth				
-- Slope				
-- Drainage structures				
-- Vegetation (type, soil preparation procedures)				
o Installation procedures (equipment and labor requirements)				
o Erosion control procedures				
1.2 Ground-water monitoring:	264.112(b)(5)/265.112(b)(5); 264.90/265.90			
o Well installation:				
-- Number, location, and depth of wells				
-- Method of construction				
o Types of analyses:				
-- Number, location, and frequency				
-- Procedures for analyses				
o Maintenance of equipment				
1.3 Description of security systems:	264.14/265.14			
o Existing facility fence maintenance				
o Additional fencing at closure				
o Other security equipment				

EPA I.D. _____

CONTINGENT CLOSURE PLAN CHECKLIST
CERTAIN TANK SYSTEMS, WASTE PILES, SURFACE IMPOUNDMENTS

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1.4 Survey plat	264.116/265.116			
2. <u>CLOSURE SCHEDULE</u>	264.112(b)(6)/265.112(b)(6)			
2.1 Milestone chart showing time for:				
o Closure cover installation				
o Vegetation planting				
o Total time to complete closure	264.113(b)/265.113(b)			
2.2 Request for extension to deadline for completing closure	264.113(c)/265.113(c)			

POST-CLOSURE PLAN CHECKLIST

POST-CLOSURE PLAN CHECKLIST

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
1. GROUND-WATER MONITORING	264.118(b)(1)/265.118(b)(1); 264.310(b)/265.310(b); 265.90/265.90			
1.1 Number, location, and depth of wells				
1.2 Frequency of sampling				
1.3 Types of analyses to be conducted				
1.4 Procedures for sampling and analyses (including party responsible)				
2. SOIL MONITORING	264.118(b)(1)/265.118(b)(1); 264.280(d)(1)/265.280(d)(1)			
2.1 Number and frequency of samples				
2.2 Types of analyses to be conducted				
2.3 Procedures for sampling (including party responsible)				
3. LEACHATE MONITORING AND REMOVAL	264.118(b); 264.310(b)(2)			
3.1 Monitoring procedures and frequency of monitoring				
3.2 Estimated quantity of leachate				
3.3 Procedures for collecting and removing leachate				
3.4 Procedures for treatment and disposal:				
o On-site				
o Off-site				
3.5 Party responsible				
4. INSPECTIONS	264.118(b)(2)/265.118(b)(2)			
4.1 List of structures and facilities to be inspected				
4.2 Frequency of inspections				
4.3 Party responsible				

POST-CLOSURE PLAN CHECKLIST

EPA I.D. _____

SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
5. <u>MAINTENANCE ACTIVITIES</u>	264.118(b)(2)/265.118(b)(2); 264.310(b)/265.310(b)			
5.1 Maintenance of final cover:				
o Mowing and fertilizing				
o Replacing lost soil and reseeding				
o Maintaining drainage channels and culverts				
o Controlling rodents and insects				
o Contingency plans for damage caused by severe storms or natural events				
5.2 Maintenance of monitoring systems:				
o Monitoring well replacement/redrilling				
o Sampling pump replacement				
o Other equipment maintenance				
5.3 Maintenance of security systems:	264.117(c)/265.117(c)			
o Fence, warning signs, and gates maintenance				
o Responsible party				
6. <u>CONTINUATION OF LAND TREATMENT PROCESSES</u>	264.280/265.280			
6.1 Procedures for continued degradation of hazardous constituents (disking, fertilizing, liming, irrigation)				
6.2 Procedures for controlling run-on and run-off:				
o Drainage system and erosion repair				
o Run-off quantities and handling methods				
6.3 Procedures for controlling wind dispersal of particulates				

EPA I.D. _____

POST-CLOSURE PLAN CHECKLIST

=====		=====		
SUBJECT REQUIREMENT	PART 264/265	PROVIDED	NOT APPLICABLE	COMMENTS
=====		=====		
6.4 Procedures to determine level of hazardous constituents in the treatment zone:				
o Identification of constituents		_____	_____	_____
o Number and location of samples		_____	_____	_____
o Types of analyses		_____	_____	_____
o Statistical methods		_____	_____	_____
7. POST-CLOSURE NOTICES	264.119/265.119			
7.1 Record of wastes:				
o Sources of information		_____	_____	_____
o Types of information to be included		_____	_____	_____
7.2 Notation on deed:				
o Schedule for filing notice		_____	_____	_____
o Location of filing		_____	_____	_____
7.3 Name, address, and phone number of contact person		_____	_____	_____
8. POST-CLOSURE CERTIFICATION	264.120/265.120			
8.1 Estimated number of inspections		_____	_____	_____
8.2 Testing and analyses to be performed		_____	_____	_____
8.3 Types of documentation		_____	_____	_____
=====		=====		

ATTACHMENT B

CLOSURE PLAN REVIEW CHECKLIST

FACILITY NAME: _____ FACILITY CONTACT: _____
FACILITY ID#: _____ PHONE: _____
Ohio EPA #: _____ FULL CLOSURE: _____ PARTIAL CLOSURE: _____

REVIEWER: _____ DATE: _____

UNITS TO BE CLOSED

- | | |
|----------|-----------|
| 1. _____ | 6. _____ |
| 2. _____ | 7. _____ |
| 3. _____ | 8. _____ |
| 4. _____ | 9. _____ |
| 5. _____ | 10. _____ |

1. Does the plan include a general facility description?

2. Does the plan cover all the processes and wastes described on the facility Part A application?

3. Is the plan appropriate for the types of waste being handled? Are there better alternatives, environmentally and/or economically?

4. Does the plan contain a schedule for closure activities? Does the plan specify a closure date?

5. Does the plan address partial closure situations, i.e. closure of tanks during the operating life? . . . or closure of a storage facility that is reverting to <90 day storage?

6. Does the plan contain an estimate of the maximum inventory of wastes?

7. Does the plan adequately describe the steps for disposal of inventory, treatment wastes, and residues from decontamination?

8. Does the plan describe the steps and equipment necessary for the decontamination of facility equipment, including tanks, treatment units, storage pads, containment systems, etc. plus clean-up equipment?

9. Does the plan contain a clear description of sampling procedures and expected levels of contamination? Does the plan specify how clean is clean? Are the specified levels acceptable?

10. According to the closure schedule, will all waste be removed in 90 days, and closure completed in 180 days? Is this a realistic time frame for the amount and type of work to be done? (See #12 and #14 if the facility is to be closed as a disposal facility.) Is a time extension requested?

11. Are all the tasks mentioned in the plan included in the closure cost-estimate? Are these costs reasonable? Please see the cost-estimate guidance document for comparisons.

12. Does the closure plan, in its entirety, show convincing compliance with the closure performance standards outlined in 265.111? See also the specific performance standards for: Tanks (265.197), Surface Impoundments (265.228), Land Treatment (265.280), Landfills (265-310), Incinerators (265.351), Thermal Treatment (265.381), and Chemical, Physical, and Biological Treatment (265.404). (Actually see the OAC Reg's)

13. Does the plan note the need for and cost of obtaining a certification of closure from an independent registered professional engineer?

14. Is the facility required to have a post-closure plan? (See 265.118 and the specific facility type reg's for closure referenced in #12.)

15. Does the post-closure plan describe the planned maintenance activities, ground water monitoring activities, and the frequencies of both? And their costs?

16. Does the plan contain the name, address, and phone number of the facility contact during the post-closure care period?

17. Does the plan call for the submittal of a survey plot to the local land authority and the Ohio EPA?

18. Does the plan call for a notice to be put in the deed to the property?

19. Does the post-closure plan in it's entirety show convincing compliance with the post-closure performance standard outlined in 265.118?

02/04/88

1355U



State of Ohio Environmental Protection Agency

P.O. Box 1049, 1800 WaterMark Dr.
Columbus, Ohio 43266-0149

ATTACHMENT C



Richard F. Celeste
Governor

CLOSURE PLAN APPROVAL

CERTIFIED MAIL

Re: CLOSURE PLAN
[1]

[2]

Dear [3]:

On [4], [5] submitted to Ohio EPA a closure plan for [6]. Revisions to the closure plan were received on [7]. The closure plan was submitted pursuant to Rule 3745-66-12 of the Ohio Administrative Code (OAC) in order to demonstrate that [8] proposal for closure complies with the requirements of OAC Rules 3745-66-11 and 3745-66-12.

The public was given the opportunity to submit written comments regarding the closure plan of [9] in accordance with OAC Rule 3745-66-12. No comments were received by Ohio EPA in this matter.

Based upon review of the company's submittal and subsequent revisions, I conclude that the closure plan for the hazardous waste facility at [10] meets the performance standard contained in OAC Rule 3745-66-11 and complies with the pertinent parts of OAC Rule 3745-66-12.

The closure plan submitted to Ohio EPA by [11] is hereby approved.(with the following modifications:)

Please be advised that approval of this closure plan does not release [12] from any responsibilities as required under the Hazardous and Solid Waste Amendments of 1984 regarding corrective action for all releases of hazardous waste or constituents from any solid waste management unit, regardless of the time at which waste was placed in the unit.

Due to the fact that the Ohio EPA is not currently authorized to conduct the federal hazardous waste program in Ohio, your closure plan also must be reviewed and approved by USEPA. Federal RCRA closure regulations (40 CFR 265.112) require that you submit a closure plan to George Hamper, Chief, Waste Management Division, Technical Programs Section, Ohio Unit, USEPA, Region V, 5HS-13, 230 South Dearborn Street, Chicago, Illinois 60604. Approval by both agencies is necessary prior to commencement of activities required by the approved closure plan. If closure activities will, of necessity, take longer

than 180 days to complete in order to allow for a period of time for review and approval by USEPA, a longer closure period is hereby approved pursuant to OAC rule 3745-66-13(B) provided [13] shall commence closure upon receipt of this approval by Ohio EPA or upon receipt of approval by USEPA, whichever occurs later. The closure period shall not exceed 180 days beyond the latter approval.

You are notified that this action of the Director is final and may be appealed to the Environmental Board of Review pursuant to Section 3745.04 of the Ohio Revised Code. The appeal must be in writing and set forth the action complained of and the grounds upon which the appeal is based. It must be filed with the Environmental Board of Review within thirty (30) days after notice of the Director's action. A copy of the appeal must be served on the Director of the Ohio Environmental Protection Agency and the Environmental Enforcement Section of the Office of the Attorney General within three (3) days of filing with the Board. An appeal may be filed with the Environmental Board of Review at the following address: Environmental Board of Review, 236 East Town Street, Room 300, Columbus, Ohio 43266-0557.

When closure is completed, the Ohio Administrative Code Rule 3745-66-15 requires the owner or operator of a facility to submit to the Director of the Ohio EPA certification by the owner or operator and a registered professional engineer that the facility has been closed in accordance with the approved closure plan. The certification by the owner or operator shall include the statement found in OAC 3745-50-42(D). These certifications should be submitted to: Richard L. Shank, Director, Ohio Environmental Protection Agency, Attn: Thomas Crepeau, Program Planning and Management Section, Division of Solid and Hazardous Waste Management, P.O. Box 1049, Columbus, Ohio 43266-0149.

Sincerely,

Richard L. Shank, Ph.D.
Director

RLS/RM/ara

cc: Thomas Crepeau/DSHWM Central File, Ohio EPA
Rebecca Strom, USEPA, Region V
[14]
Randy Meyer, DSHWM, Ohio EPA

1370U

CLOSURE PLAN APPROVAL WORK SHEET

1. Company Name: _____
USEPA/OEPA ID #s: _____
2. Responsible Official: _____
Address: _____

3. Responsible Official: Mr./Ms./Mrs. _____
4. Date of Initial Receipt: _____
5. Company Name: _____
6. HW Mgmt. Units & Location(s): _____

7. Date(s) of Revisions: _____

8. Company Name: _____
9. Company Name: _____
10. Company Name: _____
11. Company Name: _____
12. Company Name: _____
13. Company Name: _____
14. cc: _____, DO ,Ohio EPA

PUBLIC NOTICE

_____ County

RECEIPT OF HAZARDOUS WASTE CLOSURE PLAN

For: _____, U.S. EPA ID No.: _____,

Ohio Permit No.: _____,

Ohio _____. Pursuant to OAC Rule 3745-66-10 thru 17 and 40 CFR, Subpart G, 265.110 thru 117, the Ohio Environmental Protection Agency (Ohio EPA) is hereby giving notice of the receipt of a Hazardous Waste Facility Closure Plan for the above referenced facility. Ohio EPA is also giving notice that this facility is subject to a determination concerning corrective action, a requirement under the Hazardous and Solid Waste Amendments of 1984, which concerns any possible uncorrected releases of hazardous waste or hazardous constituents to the environment from any current or previous solid waste management units at the above facility. A corrective action determination is required from hazardous waste facilities intending to close.

Copies of the facility's Closure Plan will be available for public review at the _____ Public Library, _____,

Ohio _____ and the Ohio EPA, _____ District Office, _____, Ohio _____.

Comments concerning the Closure Plan or factual information concerning any releases of hazardous waste or hazardous waste constituents by the above facility requiring corrective action should be submitted within 30 days of this notice to: Ohio Environmental Protection Agency, Div. of Solid & Hazardous Waste Mgmt., Program Planning and Management Section, Attn: Thomas E. Crepeau, Box 1049, Columbus, Ohio 43266-0149.

PERMIT REVISIONS AND MODIFICATIONS.

(A) A HAZARDOUS WASTE FACILITY PERMIT MAY BE MODIFIED OR REVISED FOR THE FOLLOWING REASONS:

- (1) THE PERMITTEE DESIRES TO ACCOMPLISH ALTERATIONS, ADDITIONS, OR DELETIONS TO THE PERMITTED FACILITY, OR TO UNDERTAKE ALTERATIONS, ADDITIONS, DELETIONS, OR ACTIVITIES THAT ARE INCONSISTENT WITH OR NOT AUTHORIZED BY THE EXISTING PERMIT; OR
- (2) NEW DATA OR INFORMATION JUSTIFY PERMIT CONDITIONS IN ADDITION TO OR DIFFERENT FROM THOSE IN THE EXISTING PERMIT; OR
- (3) THE STANDARDS, CRITERIA, OR RULES UPON WHICH THE EXISTING PERMIT IS BASED HAVE BEEN CHANGED BY NEW, AMENDED, OR RESCINDED STANDARDS, CRITERIA, OR RULES, OR BY JUDICIAL DECISION AFTER THE EXISTING PERMIT WAS ISSUED, AND THE CHANGE JUSTIFIES PERMIT CONDITIONS IN ADDITION TO OR DIFFERENT FROM THOSE IN THE EXISTING PERMIT; OR
- (4) THE PERMITTEE PROPOSES TO TRANSFER THE PERMIT TO ANOTHER PERSON.

(B) A WRITTEN REQUEST FOR A MODIFICATION OR REVISION FROM THE PERMITTEE SHALL BE SUBMITTED TO THE DIRECTOR AND SHALL CONTAIN SUCH INFORMATION AS IS NECESSARY TO SUPPORT THE REQUEST. THE DIRECTOR SHALL WITHIN THIRTY DAYS OF THE RECEIPT OF A REQUEST, CLASSIFY THE REQUEST INTO ONE OF THE FOLLOWING CATEGORIES:

- (1) A "MODIFICATION" IS A CHANGE OR ALTERATION TO THE HAZARDOUS WASTE FACILITY OR ITS OPERATIONS THAT IMPACTS ON THE SITING CRITERIA CONTAINED IN DIVISION (C)(6) OF SECTION 3734.05 OF THE REVISED CODE INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:
 - (a) A STORAGE FACILITY REQUESTING AUTHORITY TO CONDUCT TREATMENT OR DISPOSAL ACTIVITIES; OR
 - (b) A TREATMENT FACILITY REQUESTING AUTHORITY TO CONDUCT DISPOSAL ACTIVITIES; OR
 - (c) A TREATMENT OR DISPOSAL FACILITY REQUESTING AUTHORITY TO CONDUCT TREATMENT OR DISPOSAL METHODS WHICH ARE DIFFERENT FROM THOSE PREVIOUSLY AUTHORIZED AND WHICH MAY PRESENT A POTENTIAL INCREASED RISK OF HAZARD TO THE PUBLIC HEALTH OR THE ENVIRONMENT; OR
 - (d) A TREATMENT, STORAGE, OR DISPOSAL FACILITY REQUESTING AUTHORITY TO HANDLE ADDITIONAL WASTE TYPES WHEN SUCH WASTES MAY PRESENT A POTENTIAL INCREASED RISK OF HAZARD TO THE PUBLIC HEALTH AND THE ENVIRONMENT WHEN COMPARED TO WASTES PREVIOUSLY APPROVED FOR TREATMENT, STORAGE OR DISPOSAL AT THE FACILITY; OR

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- (e) A TREATMENT, STORAGE, OR DISPOSAL FACILITY REQUESTING ADDITIONAL OPERATIONAL CAPACITY WHEN SUCH ADDITIONAL CAPACITY MAY PRESENT A POTENTIAL INCREASED RISK OF HAZARD TO THE PUBLIC HEALTH AND THE ENVIRONMENT WHEN COMPARED TO THE OPERATIONAL CAPACITY PREVIOUSLY APPROVED FOR TREATMENT, STORAGE OR DISPOSAL AT THE FACILITY; OR
 - (f) OTHER CHANGES OR ALTERATIONS WHICH MAY PRESENT A POTENTIAL INCREASED RISK OF HAZARD TO THE PUBLIC HEALTH AND THE ENVIRONMENT AS DETERMINED BY THE DIRECTOR.
- (2) PERMIT REVISIONS ARE ALL OTHER CHANGES OR ALTERATIONS AS DESCRIBED BY PARAGRAPHS (A)(1) TO (A)(4) OF THIS RULE.
- (C) OWNERS OR OPERATORS OF FACILITIES APPROVED PURSUANT TO A REVIEW OF THE "PART A" APPLICATION SHALL SUBMIT AN AMENDED "PART A" APPLICATION IN ACCORDANCE WITH RULE 3745-50-43 OF THE ADMINISTRATIVE CODE AND SUCH OTHER INFORMATION AS THE DIRECTOR DETERMINES NECESSARY WHEN THE REQUEST HAS BEEN CLASSIFIED AS A PERMIT REVISION.
 - (D) OWNERS OR OPERATORS OF FACILITIES APPROVED PURSUANT TO A REVIEW OF THE "PART B" APPLICATION SHALL SUBMIT THE RELEVANT AMENDED PORTIONS OF THE "PART B" APPLICATION IN ACCORDANCE WITH RULE 3745-50-44 OF THE ADMINISTRATIVE CODE WHEN APPLYING FOR ANY PERMIT REVISIONS OR MODIFICATIONS.
 - (E) OWNERS OR OPERATORS OF FACILITIES APPROVED PURSUANT TO A REVIEW OF THE "PART A" APPLICATION SHALL SUBMIT THE RELEVANT PORTIONS OF A "PART B" APPLICATION WHEN THE REQUEST HAS BEEN CLASSIFIED AS A PERMIT MODIFICATION.
 - (F) UPON RECEIPT OF A "PART B" APPLICATION FOR A PERMIT MODIFICATION OR MODIFICATION AND RENEWAL APPLICATION AS DESCRIBED BY PARAGRAPH (D)(8) OF RULE 3745-50-40 OF THE ADMINISTRATIVE CODE, THE STAFF OF THE ENVIRONMENTAL PROTECTION AGENCY SHALL CONDUCT A PRELIMINARY REVIEW OF THE APPLICATION TO DETERMINE IF:
 - (1) THE APPLICATION IS COMPLETE; AND
 - (2) THE PROPOSAL APPEARS TO COMPLY WITH THE HAZARDOUS WASTE FACILITY STANDARDS CHAPTERS.
 - (G) UPON RECEIPT OF A COMPLETED MODIFICATION APPLICATION OR MODIFICATION AND RENEWAL APPLICATION AS DESCRIBED IN PARAGRAPH (D)(8) OF RULE 3745-50-40 OF THE ADMINISTRATIVE CODE AND A PRELIMINARY DETERMINATION BY THE STAFF OF THE ENVIRONMENTAL PROTECTION AGENCY THAT THE APPLICATION APPEARS TO COMPLY WITH AGENCY RULES AND MEETS AGENCY PERFORMANCE STANDARDS, THE DIRECTOR SHALL TRANSMIT THE APPLICATION AND THE PRELIMINARY DETERMINATION TO THE HAZARDOUS WASTE FACILITY BOARD.

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- (H) UPON RECEIPT OF A COMPLETE "PART A" OR "PART B" APPLICATION FOR A PERMIT REVISION, THE DIRECTOR SHALL CONDUCT A REVIEW TO DETERMINE IF THE PROPOSAL COMPLIES WITH THE DIRECTOR'S STANDARDS.
- (I) UPON COMPLETION OF THE REVIEW FOR A PERMIT REVISION THE DIRECTOR SHALL:
- (1) ISSUE A DRAFT REVISED PERMIT OR A NOTICE OF INTENT TO DENY THE REVISION REQUEST; AND
 - (2) GIVE PUBLIC NOTICE OF THE ISSUANCE OF THE DRAFT REVISED PERMIT OR NOTICE OF INTENT TO DENY THE REVISION REQUEST, AT A MINIMUM, IN A NEWSPAPER HAVING GENERAL CIRCULATION IN THE COUNTY IN WHICH THE FACILITY IS LOCATED AND OVER LOCAL RADIO STATIONS. THE NOTICE SHALL CONTAIN, AT A MINIMUM, A SUMMARY OF THE APPLICATION AND THE DRAFT REVISED PERMIT OR NOTICE OF INTENT TO DENY THE REVISION REQUEST, THE LOCATION OF THE FACILITY, A DESCRIPTION OF THE PROPOSED REVISION, THE LOCATION WHERE COPIES OF THE APPLICATION AND DRAFT REVISED PERMIT OR NOTICE OF INTENT TO DENY THE REVISION REQUESTS ARE AVAILABLE FOR INSPECTION, AND THE STATEMENT THAT ANY PERSON MAY SUBMIT WRITTEN COMMENTS RELEVANT TO THE PERMIT REVISION APPLICATION AND DRAFT REVISED PERMIT OR NOTICE OF INTENT TO DENY THE REVISION REQUEST OR MAY REQUEST A PUBLIC MEETING THEREON WITHIN FORTY-FIVE DAYS OF THE PUBLIC NOTICE; AND
 - (3) IF SIGNIFICANT INTEREST IS SHOWN IN A PUBLIC MEETING, THE DIRECTOR SHALL PROMPTLY FIX AND GIVE PUBLIC NOTICE, AT A MINIMUM, IN A NEWSPAPER HAVING GENERAL CIRCULATION IN THE COUNTY IN WHICH THE FACILITY IS LOCATED AND OVER LOCAL RADIO STATIONS, OF A DATE FOR A PUBLIC MEETING WHICH SHALL BE HELD IN THE COUNTY IN WHICH THE FACILITY IS LOCATED, NOT FEWER THAN THIRTY DAYS AFTER PUBLIC NOTICE OF THE PUBLIC MEETING. AT THE PUBLIC MEETING, ANY PERSON MAY SUBMIT WRITTEN OR ORAL COMMENTS RELEVANT TO THE PERMIT REVISION APPLICATION AND DRAFT REVISED PERMIT OR NOTICE OF INTENT TO DENY THE REVISION REQUEST; AND
 - (4) WITHIN SIXTY DAYS OF THE PUBLIC MEETING OR CLOSE OF THE PUBLIC COMMENT PERIOD, THE DIRECTOR SHALL ISSUE THE REVISED PERMIT OR DENY THE REVISION REQUEST; AND
 - (5) IF THE DIRECTOR APPROVES AN APPLICATION FOR A REVISION, HE SHALL ISSUE THE REVISED PERMIT UPON SUCH TERMS AND CONDITIONS AS HE FINDS ARE NECESSARY TO ENSURE THAT THE OPERATION, MAINTENANCE, CLOSURE, AND POST-CLOSURE CARE OF THE HAZARDOUS WASTE FACILITY ARE IN ACCORDANCE WITH THE HAZARDOUS WASTE RULES.
- (J) THE DIRECTOR MAY INITIATE A PERMIT REVISION OF A HAZARDOUS WASTE FACILITY INSTALLATION AND OPERATION PERMIT BY:

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- (1) ISSUING A DRAFT REVISED PERMIT; AND
- (2) GIVING PUBLIC NOTICE OF THE ISSUANCE OF THE DRAFT PERMIT REVISION, AT A MINIMUM, IN A NEWSPAPER HAVING GENERAL CIRCULATION IN THE COUNTY IN WHICH THE FACILITY IS LOCATED AND OVER LOCAL RADIO STATIONS. THE NOTICE SHALL CONTAIN, AT A MINIMUM, A SUMMARY OF THE DRAFT PERMIT REVISION, THE LOCATION OF THE FACILITY, A DESCRIPTION OF THE FACILITY, THE LOCATION WHERE COPIES OF THE DRAFT REVISED PERMIT ARE AVAILABLE FOR INSPECTION, AND THE STATEMENT THAT ANY PERSON MAY SUBMIT WRITTEN COMMENTS RELEVANT TO THE DRAFT PERMIT REVISION OR MAY REQUEST A PUBLIC MEETING THEREON WITHIN FORTY-FIVE DAYS OF THE ISSUANCE OF THE PUBLIC NOTICE; AND
- (3) IF SIGNIFICANT INTEREST IS SHOWN IN A PUBLIC MEETING, PROMPTLY FIXING AND GIVING PUBLIC NOTICE, AT A MINIMUM, IN A NEWSPAPER HAVING GENERAL CIRCULATION IN THE COUNTY IN WHICH THE FACILITY IS LOCATED AND OVER LOCAL RADIO STATIONS, OF A DATE FOR A PUBLIC MEETING WHICH SHALL BE HELD IN THE COUNTY IN WHICH THE FACILITY IS LOCATED, NOT FEWER THAN THIRTY DAYS AFTER PUBLIC NOTICE OF THE PUBLIC MEETING. AT THE PUBLIC MEETING, ANY PERSON MAY SUBMIT WRITTEN OR ORAL COMMENTS RELEVANT TO THE PROPOSED REVISED PERMIT; AND
- (4) WITHIN SIXTY DAYS OF THE PUBLIC MEETING OR CLOSE OF THE PUBLIC COMMENT PERIOD, ISSUING THE REVISED PERMIT.

(K) THE DIRECTOR MAY INITIATE A PERMIT MODIFICATION OF A HAZARDOUS WASTE FACILITY INSTALLATION OR OPERATION PERMIT BY TRANSMITTING A PRELIMINARY STAFF DETERMINATION DESCRIBING THE PROPOSED MODIFICATION TO THE HAZARDOUS WASTE FACILITY BOARD.

02 MAY 1985

Effective: _____

CERTIFICATION _____

22 APR 1985
Date

Promulgated under: RC Chapter 119
Rule amplifies: RC Section 3734.12
Prior effective date: 2/15/85 (Emer.)

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3745-50-47

WITHDRAWAL OF PERMITS.

A FACILITY WHICH WISHES TO HAVE ITS HAZARDOUS WASTE FACILITY INSTALLATION AND OPERATION PERMIT WITHDRAWN MUST SUBMIT A WRITTEN REQUEST TO THE DIRECTOR.

(A)

THE REQUEST SHALL INCLUDE THE FOLLOWING:

- (1) A DETAILED EXPLANATION AS TO WHY A PERMIT IS NO LONGER REQUIRED AND A STATEMENT AS TO THE FACILITY'S HAZARDOUS WASTE ACTIVITY STATUS FOLLOWING WITHDRAWAL (E.G., SMALL QUANTITY GENERATOR, STORAGE LESS THAN 90 DAYS, ETC.);
- (2) TWO COPIES OF THE FACILITY'S APPROVED CLOSURE PLAN AND POST-CLOSURE PLAN, AS APPLICABLE, OR A STATEMENT JUSTIFYING WHY A CLOSURE PLAN AND POST-CLOSURE PLAN WERE NOT REQUIRED, AND TWO COPIES OF THE CLOSURE PLAN CERTIFICATIONS REQUIRED BY RULES 3745-66-15 OR 3745-55-15 OF THE ADMINISTRATIVE CODE, AS APPLICABLE;
- (3) A CERTIFICATION STATEMENT SIGNED BY THE DULY AUTHORIZED FACILITY REPRESENTATIVE IN ACCORDANCE WITH RULE 3745-50-42(A) OF THE ADMINISTRATIVE CODE.

(B)

UPON RECEIPT OF THE DOCUMENTS LISTED IN PARAGRAPH (A), THE DIRECTOR SHALL REVIEW THE INFORMATION SUBMITTED BY THE PERMIT HOLDER INCLUDING THE FACILITY CLOSURE AND POST-CLOSURE PLAN, AS APPLICABLE.

(C)

AFTER REVIEW OF THE WITHDRAWAL REQUEST, THE DIRECTOR SHALL FORWARD TO THE HAZARDOUS WASTE FACILITY APPROVAL BOARD (HWFAB):

- (1) A COPY OF THE FACILITY WITHDRAWAL REQUEST;
- (2) THE RESULTS OF THE REVIEW BY THE AGENCY STAFF;
- (3) A COPY OF THE CLOSURE AND POST-CLOSURE PLAN, AS APPLICABLE, OR, A STATEMENT AS TO WHY A CLOSURE PLAN AND POST-CLOSURE PLAN WERE NOT REQUIRED; AND
- (4) A STATEMENT AS TO THE HAZARDOUS WASTE ACTIVITY STATUS OF THE FACILITY FOLLOWING WITHDRAWAL; (E.G., SMALL QUANTITY GENERATOR, STORAGE LESS THAN 90 DAYS, ETC.).

(D)

THE DIRECTOR SHALL PROMPTLY NOTIFY THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY OF EACH FACILITY WITHDRAWAL ACKNOWLEDGEMENT RECEIVED FROM THE HWFAB.

Effective AUG 30 1984

Robert D. Higgins

CERTIFICATION

JUL 30 1987
Date

Promulgated under: RC Chapter 119
Rule amplifies: RC Section 3734.12

ATTACHMENT F

CONTINUING RELEASES AT PERMITTED FACILITIES

Sec. 206. Section 3004 of the Solid Waste Disposal Act is amended by adding the following new subsection after subsection (1) thereof:

"(u) **CONTINUING RELEASES AT PERMITTED FACILITIES.**—Standards promulgated under this section shall require, and a permit issued after the date of enactment of the Hazardous and Solid Waste Amendments of 1984 by the Administrator or a State shall require, corrective action for all releases of hazardous waste or constituents from any solid waste management unit at a treatment, storage, or disposal facility seeking a permit under this subtitle, regardless of the time at which waste was placed in such unit. Permits issued under section 3005 shall contain schedules of compliance for such corrective action (where such corrective action cannot be completed prior to issuance of the permit) and assurances of financial responsibility for completing such corrective action."

CORRECTIVE ACTION BEYOND FACILITY BOUNDARIES: UNDERGROUND TANKS

Sec. 207. Section 3004 is amended by adding the following after subsection (u):

"(v) **CORRECTIVE ACTIONS BEYOND FACILITY BOUNDARY.**—As promptly as practicable after the date of the enactment of the Hazardous and Solid Waste Amendments of 1984, the Administrator shall amend the standards under this section regarding corrective action required at facilities for the treatment, storage, or disposal of hazardous waste listed or identified under section 3001 to require that corrective action be taken beyond the facility boundary where necessary to protect human health and the environment unless the owner or operator of the facility concerned demonstrates to the satisfaction of the Administrator that, despite the owner or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such action. Such regulations shall take effect immediately upon promulgation, notwithstanding section 3010(b), and shall apply to—

"(1) all facilities operating under permits issued under subsection (c), and

"(2) all landfills, surface impoundments, and waste pile units (including any new units, replacements of existing units, or lateral expansions of existing units) which receive hazardous waste after July 26, 1982.

Pending promulgation of such regulations, the Administrator shall issue corrective action orders for facilities referred to in paragraphs (1) and (2), on a case-by-case basis, consistent with the purposes of this subsection.

"(w) **UNDERGROUND TANKS.**—Not later than March 1, 1985, the Administrator shall promulgate final permitting standards under this section for underground tanks that cannot be entered for inspection. Within 48 months after the date of the enactment of the Hazardous and Solid Waste Amendments of 1984, such standards shall be modified, if necessary, to cover at a minimum all requirements and standards described in section 3003."

FINANCIAL RESPONSIBILITY FOR CORRECTIVE ACTION

Sec. 208. Section 3004(a) of the Solid Waste Disposal Act (as redesignated by section 201 of this Act) is amended by inserting "(including financial responsibility for corrective action)" immediately after "and financial responsibility" in paragraph (6).

ENVISAGE ENVIRONMENTAL INCORPORATED

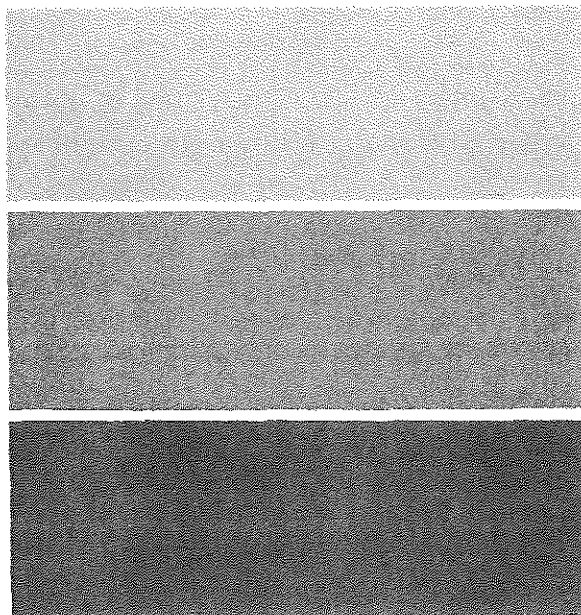
P. O. Box 152, Richfield, Ohio 44286

Phone (216) 526-0990

REPORT NO. 87-1621CA
COMPANY Master Metals
TITLE _____
DATE 8-13-87

MASTER METALS INC.
2850 WEST 3RD STREET
CLEVELAND, OHIO

PARTIAL FACILITY CLOSURE
PLAN OF ACTION



THOMPSON, HINE AND FLORY

1100 NATIONAL CITY BANK BUILDING

CLEVELAND, OHIO 44114

(216) 566-5500 • TELEX 980217

IN COLUMBUS, OHIO
100 EAST BROAD STREET
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(306) 833-5900

IN WASHINGTON, D.C.
1920 N STREET, N.W.
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August 14, 1987

WRITER'S DIRECT DIAL NUMBER

(216) 566-5717

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Assistant United States Attorney
Northern District of Ohio
1404 East 9th Street
Suite 500
Cleveland, Ohio 44114

Barbara A. Rogers, Esquire
U.S. Department of Justice
Land and Natural Resources Division
Environmental Enforcement Section
Room 1718
10th and Pennsylvania Avenue, N.W.
Washington, D. C. 20530

Mr. Dale Helmers
U.S. Environmental Protection Agency
Region V
5 HE-12
230 South Dearborn Street
Chicago, Illinois 60604

Re: Master Metals

Dear Barbara, Art and Dale:

Pursuant to our settlement discussions and, in particular, our arrangements made pursuant to Barbara's letter of July 20, 1987, I am enclosing copies of Master Metals' Partial Facility Closure Plan of Action for your review and comment. As indicated in the Plan, Master Metals is proposing a multi-phase closure to bring this facility into full compliance with RCRA and other applicable laws. The initial phases set forth in the Plan address the waste piles and other units which were of immediate concern. Financial information is included in the Plan to address the sources of funds needed to implement the immediate Partial Closure. A long-term facility closure plan and trust fund will be developed and implemented immediately following implementation of the Partial Closure Plan.

SEP 01 1987
U.S. EPA REGION V
RECEIVED
AUG 17 1987
U.S. EPA REGION V
HAZARDOUS WASTE ENFORCEMENT DIVISION

CONF 2

August 14, 1987

Page 2

Your comments and directions would be appreciated at your earliest opportunity. Master Metals has already initiated the Phase I container storage reorganization and has made arrangements for all of the "capital" items in the Plan. We have compressed most of the time schedules so that a majority of the work can be completed by the end of October, 1987. Due to the quantity involved, final depletion of the waste pile of lead dross/D008 wastes will depend upon the installation of the additional rotary kiln furnace.

Thank you for your prompt attention to this matter. We look forward to implementing this Partial Closure Plan.

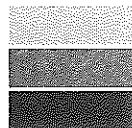
Sincerely,

A handwritten signature in black ink, appearing to read "Mike Cyphert". The signature is stylized with a large, looping "M" and a cursive "Cyphert".

Michael A. Cyphert

MAC/nab
Enclosure

cc: Douglas Mickey
William Schonberg, Esq.



**Envisage
Environmental
Incorporated**

P.O. Box 152 Richfield, Ohio 44286
Phone (216) 526-0990

Envisage Environmental Incorporated

P.O. Box 152 Richfield, Ohio 44286
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SEP 01 1987

August 13, 1987

RECEIVED

SEP 01 1987

U.S. EPA, REGION V
SWB - PMS

Mr. Douglas Mickey
Master Metals Inc.
2850 West 3rd Street
Cleveland, Ohio 44113

Enclosed is the "Partial Facility Closure" Plan which outlines the Plan of Action for the removal of waste piles at the Master Metals facility. It is intended to be utilized as a guideline for partial closure procedures, as requested by the U.S. Department of Justice in their letter of July 20, 1987 to Mr. Michael A. Cyphert.

Respectfully Submitted,

David K. Munson

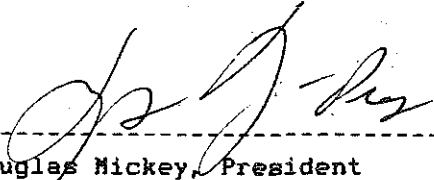
David K. Munson
Regulatory Compliance Manager

COPY 2

CERTIFICATION

I certify under penalty of law that I have personally examined
and am familiar with the information submitted in this document
and all attachments. I believe the information contained in this
document is accurate and the estimations in good faith.

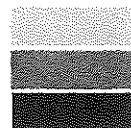
I am aware that there are significant penalties for submitting
false information.



Douglas Mickey, President
Master Metals, Inc.

8/14/87

DATE

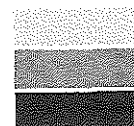


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Incorporated**

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INTRODUCTION:

The goal of this "Partial Closure Plan" is to detail the phases required to remove and close all existing waste piles at the Master Metals facility.

PHASE ONE at the site will focus on the reorganization of the hazardous materials into secure container storage. Providing secure container storage for the battery plates and K069 emission control dust is of primary importance.

PHASE TWO of Partial Closure will concentrate on the reclamation and closure of the remaining waste piles containing lead dross and D008 by-products.

PRESENT INVENTORY:

The present inventory of hazardous materials consists of lead-acid batteries/plates, emission control dust(K069) and lead dross(D008).

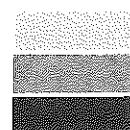
The lead-acid batteries, emission control dust, and lead dross are presently stored in "waste piles". Also, lead dross is stored on-site in drum containers.

The estimated inventory of these materials, as of 07-29-87, are as follows:

<u>Hazardous Material</u>	<u>Storage Method</u>	<u>Estimated Volume(cu yds)</u>	<u>Estimated Weight(tons)</u>
Lead-acid batteries	One Waste Pile	200 cu yds	200 tons
Emission control dust	One Waste Pile	125 cu yds	150 tons
Lead dross	Five Waste Piles	1,500 cu yds	1,900 tons
Lead dross	Drums	650 cu yds	800 tons

The volume estimations above were obtained by measuring the average length, width and height of each waste pile. The estimated weight was obtained by weighing a representative sample of the material in the waste piles.

In addition to the above inventory of hazardous materials, there exists non-hazardous inventory, including empty drums, scrap steel, broken processing equipment, and wood pallets.



PHASE ONE: CONTAINER STORAGE REORGANIZATION:

The ultimate goal of this phase of closure is to remove the waste piles containing battery plates and K069 emission control dust. Another goal of this phase is to reorganize drum storage, thereby requiring that all arriving materials are stored on-site in bulk containers or drums.

This phase of partial closure will involve many stages as discussed in these sections:

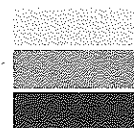
Stage 01: Reorganize drum storage area.

Stage 02: Closure of proposed location for battery storage pad.

Stage 03: Construct storage pad for battery plate containers.

Stage 04: Modify existing storage pad for K069 containers.

Stage 05: Fabricate storage containers and transfer
batteries/battery plates and K069 baghouse dust.



Stage 01: Reorganize drum storage area.

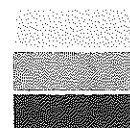
Overview: After August 01, 1987, all hazardous materials arriving at Master Metals will remain in their shipping containers. The majority of these arriving containers are 55-gallon drums. Upon arrival, the drums will be sampled and labelled in accordance to the Waste Analysis Plan. After acceptance of the material, the drums will be placed in the reorganized "Drum Storage Area".

In the Drum Storage Area, the drums will be organized in accessible rows. Each drum will be labelled with an Internal Reference #, which will refer to a specific shipment and/or customer.

The reorganization will be achieved by removing excess empty and full drum inventories and clearing non-hazardous rubbish/scrap.

The drums containing hazardous material, specifically lead dross(D008), are processed and reclaimed on-site in the Rotary Kiln Furnace.

In addition, there exists non-hazardous inventory that has accumulated and will be removed during cleanup. This rubbish includes empty drums, scrap steel, broken processing equipment, and wood pallets. These materials are containerized into a portable dumpster box, so that this non-hazardous rubbish can be transported by BFI Industries to an approved municipal landfill site. The scrap metals will be transported to a scrap recycling facility.



Compliance Schedule: This work will be performed during the period of July 01, 1987 - October 01, 1987 (ie: 12 weeks).

Week 01-02: Hire contractor and crew to perform rubbish removal.
Obtain dumpsters for hauling non-hazardous rubbish.

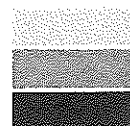
Week 02-05: Remove excess trash and rubbish along the northern and western perimeters of existing parking area. Rubbish and trash will be removed along the Western perimeter up the security fence.

Week 04-09: This period will focus on removal of non-hazardous trash, rubbish and scrap metals from the southwest portion of the facility. Also, reclaimable inventory, such as lead dross, will be either directly processed or placed in existing waste piles located near the furnaces. The lead dross material will only be placed in the existing waste pile if the present container is insufficient to prevent rainwater contact, wind dispersal or continued spillage. The waste pile will be equipped with plastic protective tarps, as described in another section.

Also, as the cleanup progresses, the accumulated ground dirt and dust will be collected by a Tennant Model 265 Industrial Sweeper.

Week 10-12: The secure drums of lead dross located throughout the facility will be transferred to the drum area. These storage drums will be placed in evenly spaced rows with enough room for access. Also, the aisles will provide easy access to the material so that it may be identified and transferred to the furnace for processing.

Once these drum storage rows are organized, containerized materials arriving at the Master Metals facility will remain in the shipment drums for storage in this area.



Results: The reorganization of the drum storage area will:

- provide organized drum storage & efficient drum handling.
- reduce present waste pile inventories by requiring that arriving drummed material be placed in the Drum Storage Area, not in an existing waste pile.
- increase access to drum containers, therefore improving handling and process efficiency of drummed material.
- improve access throughout the entire facility by removing drums from aisles/roadways.

Closure Cost: The reorganization of the Drum Storage Area is being performed, primarily, by an outside contractor. The following costs apply to this part of Closure:

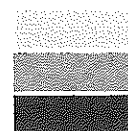
Equipment:

90 cu yd Dumpster Rental for 12 weeks @ \$ 1,000/week	= \$ 12,000
(Rubbish Disposal included in above price)	
Tennant 265 Mobile Sweeper Rental @ \$ 1,250/month	= \$ 3,750

Labor:

Contractor Crew(3 men) for 12 weeks @ \$ 1,000/week	= \$ 12,000
Employees @ 20 hours/week for 12 weeks @ trash cleanup	= \$ 6,000
Employees @ 20 hours/week for 12 weeks @ sweeping	= \$ 6,000

TOTAL COST OF DRUM STORAGE AREA REORGANIZATION = \$ 39,750



Stage 02: Closure of proposed location for storage pad.

Overview: The proposed battery and K069 container storage pad will be located east of the existing office building, as shown on Diagrams #01 & #02. This location was chosen due to the proximity to the industrial furnaces. Therefore, material handling will be reduced when transferring the materials to the furnaces for reclamation.

Soil testing will be performed by obtaining soil core borings at two locations within the proposed area of the new storage pad. Each soil boring will be to the depth of the ground water table.

Cross-sectional samples of the soil will be obtained at predetermined intervals along the soil core. These sample intervals are estimated to be every 0.5 foot for the first two feet, every 1 foot until five foot level and then every five feet until the groundwater table is reached.

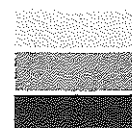
Each soil sample will be taken in triplicate; one for laboratory analysis, one for soil identification; one for storage.

The soil samples will be analyzed for arsenic, barium, cadmium, chromium, lead, mercury, selenium, silver and corrosivity. The total metal content will be determined in order to obtain a direct measurement of the trace metal concentrations. Also, the samples will be analyzed for EP Toxicity as detailed in 40CFR Part 261, Appendix II.

Prior to the construction of the secure storage pad, the existing waste pile of lead dross must be removed from this particular location within the facility. Once the material is removed or transferred within the facility, the existing concrete base will be swept and examined.

Closure Schedule: This section addresses only the closure of the area which has been proposed for the construction of the "Container Storage Pad". Implementation will begin upon approval of this Closure Plan by the appropriate authorities. The schedule will be as follows:

- Week 01: Transfer existing lead dross waste pile (250 ton) to the lead dross waste pile located directly north of the Smelting Building.
Obtain quotations for the drilling of two soil cores.
- Week 03: Utilize the industrial sweeper to vacuum the dust off the existing concrete surface. Inspect concrete.
Drill soil cores and obtain soil samples as previously described. Deliver soil samples to lab.



Week 06: Obtain results of soil analysis from laboratory.

Week 07: Determine if remedial actions are required based on laboratory analysis and site inspection.

At this point, the following options may occur:

If remediation is NOT required at this specific location within the Master Metals facility, then Stages 03 & 04 of Phase One will begin.

If remediation is required, the extent will be determined prior to the start of remedial procedures. The remedial actions, if necessary, are estimated to take 4-8 weeks. The "contaminated" soils will be processed through the Industrial Rotary Kiln Furnace. This approach is viable based on the extremely high operating temperatures in an oxidizing atmosphere. The contaminated soil input will be controlled. The air emissions are controlled with the existing baghouse unit. The collected baghouse emission dust is reprocessed on-site. The furnace "slag" resulting from this process will be analyzed for EP Toxicity, as outlined in 40CFR Part 261, Appendix II.

Once remedial action is concluded at this specific location within the facility, the construction of the Battery Storage Pad will begin, as described in Stages 03 & 04 of Phase One.

Results: The closure of this specific location within the facility will enable Master Metals to construct a secure storage pad, which will be utilized for storage of arriving industrial batteries, dismantling the batteries and storing the battery casings/lead plates in storage containers. Closure of this area is proposed so that the new concrete pad can be poured in an "uncontaminated" area.

Closure Costs: The cost of the closure of this specific area of the facility is as follows:

Transfer of present waste pile:

One employee for 40 hours @ \$25/hour	= \$ 1,000
Sweeping of existing concrete for 4 hours	= \$ 100
Drilling of two soil borings (estimated)	= \$ 4,000
Consultant obtaining triplicate core samples	= \$ 400
Analysis of 10 samples max. @ \$ 450 each	= \$ 4,500
Transfer of contaminated soil to furnace:	
One employee for 40 hours @ \$25/hour	= \$ 1,000
Engineer Certification of Location closure	= \$ 1,000

TOTAL COST OF STORAGE AREA INVESTIGATION = \$ 12,000

Stage 03: Construct storage pad for battery/plate containers.

Overview:

In order to comply with the Storage Requirements contained in 40CFR Part 266 Subpart G, Master Metals will construct a secure container storage pad for the battery dismantling operation. This concrete storage area will also be utilized for container storage of battery plates.

The container storage area will consist of a "battery receiving area", along with a secure storage area, as shown on Diagrams #01 & #02. Arriving shipments of industrial batteries will be unloaded at the battery receiving dock. After arrival, the batteries will be dismantled, therefore separating the lead battery plates from the battery casings. Any residual acid contained in the battery is collected in the "sump" located within the storage pad. The dismantled battery plates and casings will be transferred into the appropriate storage container.

Compliance Schedule: The construction of the battery unloading dock and secure storage area will begin upon completion of Stage 2, along with approval from the appropriate authorities. The implementation schedule will then proceed as follows:

Week 01-02: Schedule contractor on-site to begin work.

Week 03-06: Construction of storage pad and unloading dock.

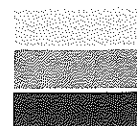
Week 07: Transfer battery waste pile into containers.

Results: The constructing of a battery storage area will:

- eliminate the present battery waste pile inventory.
- provide organized and secure battery plate storage.
- improve battery handling procedures during unloading.
- prevent acid spills from leaving the storage pad by constructing a series of trenches which direct the spills and/or rainwater to two stainless steel collection tanks.

Closure Costs: The cost for implementing a secure storage area for industrial battery storage area has been quoted at \$ 30,000. This price includes; all labor and materials for concrete pad, unloading dock, drain/trenches, berms and spill collection tanks.

TOTAL COST OF BATTERY STORAGE PAD = \$ 30,000



Stage 04: Modify existing storage pad for K069 containers.

Overview: At the present time, the K069 emission control dust waste pile is located south of the main office building.

The present K069 waste pile is situated upon a concrete pad. Once modified by adding spill control berms, this pad will serve as secure storage area for the K069 containers. This container storage pad does not have to contain battery plates or potential acid spills, therefore a modification will be appropriate.

Although soil investigation below the existing concrete pad will not occur at this time, this type of investigation could occur in the future without disrupting the K069 container storage.

Compliance Schedule: The construction of the K069 modified K069 storage pad will begin at the same time as Stage 3. The implementation schedule will then proceed as follows:

Week 01-02: Obtain quote for adding berms to existing concrete pad.

Week 03-06: Existing K069 waste pile inventory to be processed and removed from this area.

Sweep and examine existing concrete pad.

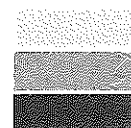
Schedule contractor on-site to construct berms.

Results: The modification of the of a K069 storage area will:

- eliminate the present K069 emission control dust waste pile inventory.
- provide organized and secure K069 storage.
- improve emission control dust handling procedures.

Closure Costs: The cost for adding berms to the existing implementing a secure storage area is estimated to be \$ 3,000.

TOTAL COST OF BATTERY STORAGE PAD = \$ 3,000



Stage 05: Fabricate storage containers and transfer batteries-
battery plates and K069 baghouse dust into containers.

Overview: Master Metals will implement "storage controls" for the Lead batteries, which will conform to 40 CFR Part 266.80 - Spent Lead-Acid Batteries Being Reclaimed. As part of these requirements, container storage must be obtained for this material.

At this time, air emission control dust(K069) is generated at and delivered to Master Metals for reclamation. This industrial waste by-product is stored in on-site waste piles prior to the reclamation operation. The lead content contained in the emission control dust is reclaimed at Master Metals by utilizing the industrial rotary kiln furnace.

The battery plate containers will be situated on the secured concrete pad, as described in Stage 03. The K069 containers will be located on the "modified" concrete pad, as described in Stage 04. All containers will be tarped to prevent the entry of rainwater into the storage container.

The estimated requirement for containers is as follows:

-K069 Emission Control Dust..... 2 containers @ 90 cu yds each

These containers will store the emission control dust generated on-site in the Rotary Kiln Furnace Baghouse System. The baghouse dust is collected quarterly, with the entire previous inventory being processed within 90 days.

-Battery Plates..... 2 containers @ 90 cu yds each

These containers will store the battery casings and plates prior to their processing in the industrial rotary furnace.

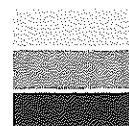
Compliance Schedule: The implementation of secure container storage for battery plates and K069 dust will begin upon completion of Stage 2, along with approval from the appropriate authorities. The implementation schedule will then proceed as follows:

Week 01: Order four 90 cubic yard containers to be fabricated.

Week 04: Take delivery of two containers to be utilized for the battery plate storage.

Week 07: The battery storage pad will be completed, as described in Stage 03. During this week, the battery waste pile will be transferred into the two containers.

Week 08: Take delivery of two additional storage containers. Transfer the K069 emission control dust into these storage containers. These containers will be placed on the, already completed, modified K069 concrete storage pad.



Results: As a result of Stage 05, the following procedures can be implemented:

- battery plate "waste pile" inventory will be removed.
- battery plates will be in a secure storage container.
- emission control dust(K069) waste pile will be removed.
- emission control dust(K069) storage will be in a secure storage container.
- emission control dust generated on-site will be collected from the baghouse in portable containers and transferred to the larger storage containers.
- arriving shipments of K069 material will remain containerized.
- wind dispersion and rain runoff of these hazardous materials will be efficiently controlled by placing a tarp over each storage container.
- access throughout the entire facility will be improved by removing waste piles.

Closure Costs: The cost for implementing this phase of closure is based on the fabrication of the storage containers, along with the labor required to transfer the present waste pile inventory.

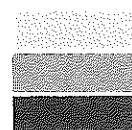
The copy of the quote for fabrication of the storage containers is contained in Appendix C of this Partial Closure Plan.

Container Fabrication: Four 90 cu yd containers

Containers x \$ 7,250/container.....\$ 29,000.

Labor to transfer inventory: 24 hrs @ \$ 25/hr..\$ 600.

BATTERY/K069 CONTAINER FABRICATION = \$ 29,600



PARTIAL CLOSURE COST: PHASE ONE SUMMARY

The following chart summarizes the cost of Phase One of the Partial Closure at the Master Metals facility:

Stage 01: Reorganize drum storage area.....\$ 39,750

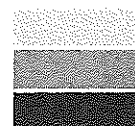
Stage 02: Closure of proposed location for storage pad.....\$ 12,000

Stage 03: Construct storage pad for bulk containers.....\$ 30,000

Stage 04: Modify existing storage pad for K069 containers..\$ 3,000

Stage 05: Fabricate storage containers and transfer
battery/battery plates and K069 baghouse dust....\$ 29,600

TOTAL PHASE ONE EXPENSES = \$ 114,350



PHASE TWO: CLOSURE OF D008 BY-PRODUCT WASTE PILES

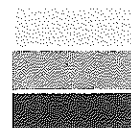
The ultimate goal of this phase of Partial Closure is to remove the waste piles containing "lead dross by-products" (ie:D008) materials.

This phase of partial closure will involve three stages as discussed in these sections:

Stage 01: Protect waste piles of lead dross/D008 wastes from wind dispersal and rainwater run-off.

Stage 02: Install additional Industrial Rotary Kiln Furnace.

Stage 03: Process lead dross/D008 inventory.



Stage 01: Protect remaining waste piles of lead dross/D008 wastes from wind dispersal and rainwater run-off.

Overview: Due to the estimated processing schedule of the D008/lead dross material, these waste piles will remain on-site for a period of time. Therefore, they will be protected from rainwater runoff and wind dispersion by utilizing plastic tarps. These tarps will cover the entire waste pile and be secured by concrete blocks.

Compliance Schedule: The installation of covering for the remaining waste piles will begin upon an approval of this closure document by the appropriate authorities. The implementation schedule will then proceed as follows:

Week 01: Order four tarps which will have the capacity to cover 4,000 square feet each. Also, order 40 concrete blocks.

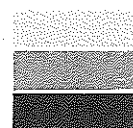
Week 03: Receive tarps and cover D008/dross waste piles.

Results: Covering the remaining waste piles will protect the material from creating rain runoff and wind dispersal.

Closure Costs: The cost of this phase is directly related to the cost of the materials.

Four tarps @ \$ 1,000 each(estimated)	= \$ 4,000
Fifty concrete blocks @ \$ 1.00 each	= 50
4 hours x two employees @ \$25.00/hour	= \$ 200

TOTAL COST OF WASTE PILE PROTECTION = \$ 4,250



Stage 02: Install additional Industrial Rotary Kiln Furnace

Overview: An additional Rotary Kiln Furnace is required in order to efficiently process and reduce the on-site inventory of lead dross by-product material. This additional furnace has a 60% greater capacity than the present furnace, therefore a greater amount of the lead dross can be processed.

Compliance Schedule: This stage has already begun due to the necessity of obtaining this equipment. The schedule is as follows:

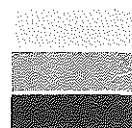
- 06-24-87: Purchase Order issued by Master Metals therefore confirming the equipment purchase. A copy of the P.O. is contained in Appendix D.
- 10-01-87: Arrival of furnace at Master Metals facility.
- 11-01-87: Installation completed and furnace operational.

Results: The installation of this Rotary Kiln Furnace will accelerate the reclamation of the lead dross waste piles.

Cost Estimate: The acquisition and installation costs for this equipment are as follows:

Rotary Kiln Furnace, including delivery	= \$ 110,450
Concrete base installation	= \$ 15,000
Refractory brick lining installation	= \$ 30,000
Installation of piping, electrical, etc	= \$ 44,550

TOTAL COST FOR ADDITIONAL FURNACE = \$ 200,000



Stage 03: Process lead dross/D008 inventory.

Overview: The last stage of partial closure is the processing of the remaining waste piles consisting of lead dross, a D008-coded by-product material. The estimated inventory of this material contained in existing waste piles is 1,900 tons.

During the course of normal reclamation operations, material from these waste piles will be processed. Due to the variation of lead content in different types of dross, different amounts of this material will be added to the batch reclamation process. The projections offered in this Partial Closure Plan are based on average material loadings into the Rotary Kiln Furnace.

Compliance Schedule: The processing schedule for this material will be based on the following assumptions:

- the additional Rotary Kiln Furnace is installed. The capacity of the existing furnace is not great enough to process this material in a relatively efficient time span.
- the estimated inventory of 1,900 tons is reasonably accurate. The waste piles were measured and material weights estimated, therefore providing a reasonable value.
- the amount of other materials arriving does not greatly increase. There is a specific amount of material that each furnace is able to process per month. The battery plates and K069 materials will have process priority due to the limited amount of containerized storage which must be available, and the need to "turn-over" this inventory.

The estimated amount of lead dross to be added to the furnace from the waste pile inventory is 105 tons per month. At this process rate, the required time for total removal of the lead dross waste piles is 18 months. This time span would begin after the first month of operation of the new Rotary Kiln Furnace. After the waste piles are removed, the area below the pile will be swept with the Tennant Industrial Sweeper.

Results: The result of this stage is the removal of all remaining waste piles from the Master Metals facility.

Closure Cost: The closure cost for this phase is related to the labor cost for the transfer of this material to the furnace. Also, the sweeping time is included.

Labor to transfer material to furnace:
One employee @ 200 hours(estimated) @ \$25/hr = \$ 5,000
Labor to sweep area below pile:
One employee @ 8 hours @ \$ 25/hr = \$ 200

COST OF PROCESSING LEAD DROSS WASTE PILES = \$ 5,200

PARTIAL CLOSURE COST: PHASE TWO SUMMARY

The cost of implementing Phase Two of the Partial Closure Plan at the Master Metals facility is summarized as follows:

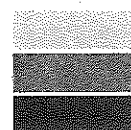
Stage 01: Protect waste piles of lead dross/D008 wastes

from wind dispersal and rainwater run-off.....\$ 4,250

Stage 02: Install additional Industrial Rotary Kiln Furnace.\$ 200,000

Stage 03: Process lead dross/D008 inventory.....\$ 5,200

TOTAL PHASE TWO EXPENSES = \$ 209,450



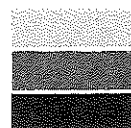
PARTIAL FACILITY CLOSURE SUMMARY

In summary, "Partial Facility Closure" will be implemented as described in this plan. The ultimate goal is to remove the existing waste piles from the facility and implement secure, organized and controlled container storage.

Certain procedures described in Phases One and Two of this plan may be implemented during the same time period, while other procedures are contingent on the completion of a previous stage of action. These situations are detailed within this Closure document.

The total cost of partial closure is estimated to be \$ 320,800. This estimate does not include the cost of retaining professional services, estimated to be \$ 15,000.

The majority of this closure plan can be implemented within a reasonable period of time after plan approval is issued, and financial considerations are stabilized in a timely fashion.



FINANCIAL ASSURANCES:

This section will describe the financial aspects of the partial facility closure and continued operation of the facility.

Liability Insurance: Master Metals maintains a liability policy insuring against fire and loss of buildings and equipment. The policy is for 1.3 million of coverage.

Non-Sudden Liability Insurance: Due to market conditions, it has been extremely difficult trying to locate a company which will write this type of policy. Master Metals will continue to work toward securing this type of policy.

Long-term Facility Closure: A "trust fund" will be set up to fund a "long-term" facility closure commitment. Once partial closure has been completed, a long-term Closure Plan will be forwarded with projected facility closure cost estimates. These cost estimates cannot be projected at this time with any reasonable degree of accuracy. Once submitted, the long-term Facility Closure Plan will be the basis for the financing of the closure trust fund.

Financing Partial Closure: The present "cash flow" projection table is contained in Appendix E of this document. The partial closure is to be financed through operating capital and a bank loan of \$100,000.

The following eight assumptions are made in the Company Reorganization Plan, which are applicable to the Cash Flow Projection and this document:

- 1) The Reorganization Plan will be consummated by 09-01-87.
- 2) Payment of Class 10 allowed claims will be paid pursuant to the terms of the Reorganization Plan.
- 3) Sales, cost of sales, and operating expenses are based upon managements current operating assumptions.
- 4) Tax claims will be paid over a six year period.
- 5) Accounts payable will be brought down to 45 days outstanding and otherwise current.
- 6) The Class six N.L. claim will be paid in accordance to Reorganization Plan.
- 7) Post-petition secured claims will be paid over three years commencing in 1988.
- 8) Forecast includes interest on; S/H loans(\$85,000), Note Payable N.L. (\$150,000), and Tax Claims.

The following page is a more detailed explanation of the financing of "EPA Expenditures", as stated in this document.

Lead Smelter and Refiner

Financial Analysis Regarding EPA Expenditures

Assumptions 1 - 8 are the same assumptions carried forward from our plan of reorganization. The projections were a carry forward from the first five months of operation of 1987. These projections differ from the ones already stated because these projections were based on operating months of 1986 and we have had a much better margin to work with this year.

Assumption 9 is relegated to the purchase and installation of a larger rotary furnace. This will result in clearing out the current piles of D008 because it is capable of 60% more volume. The \$200,000 is broken down as follows:

\$110,000	Furnace
\$ 20,000	Drive
\$ 15,000	Foundation
\$ 25,000	Refractory
\$ 30,000	Installation

The furnace arrival is due in September, hence the reason for the large dispersement. In order for funds to be available, a \$100,00 bank loan will have to be obtained. We are assuming that our reorganization plan will be complete, so that financing arrangements will be possible. Our other cash is being generated internally or by officer loans. I may note that basically all accumulated profits have either been used for the reorganization plan or the EPA project. No officer loans or bonuses have been paid back or drawn out.

The expenditures through October are for four containers for the K069 and battery plates as well as continuation of yard clean up and furnace installation.

The expenditures for November are for two more containers and the payment of the debt for the battery breaking area.

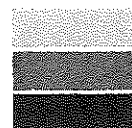
The expenditures for December are for the remaining two containers, additional payments for the battery breaking area and furnace installation.

Lead Smelter and Refiner

The resultant legal, consulting and testing fees will be paid in January when more cash will be available.

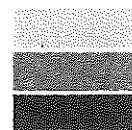
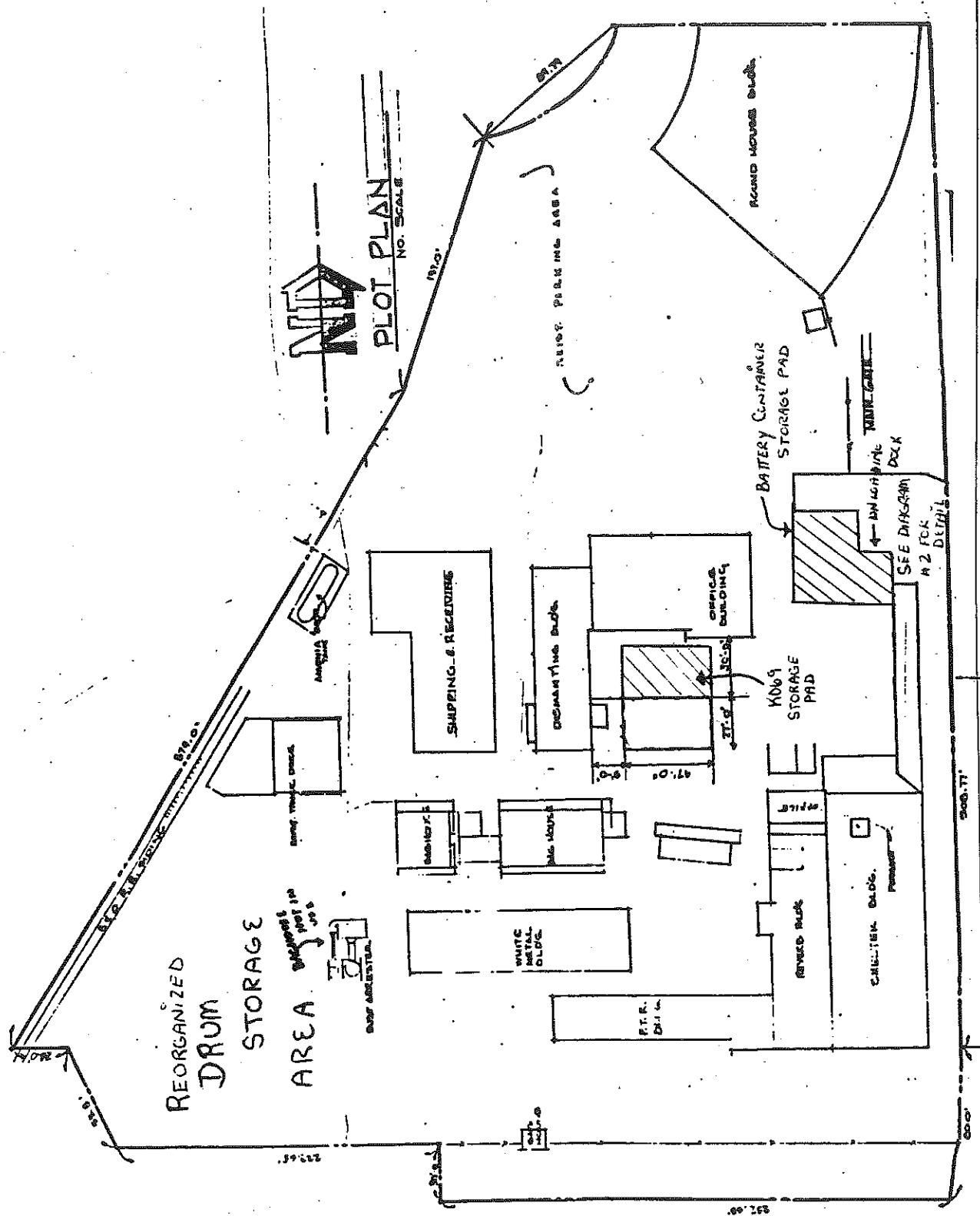
This projection is for a basic plan and payments may differ from month to month but the end result will be approximately the same.

Appendix A: Master Metals Site Map

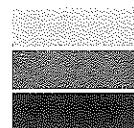


**Envisage
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P.O. Box 152 Richfield, Ohio 44286
Phone (216) 526-0990

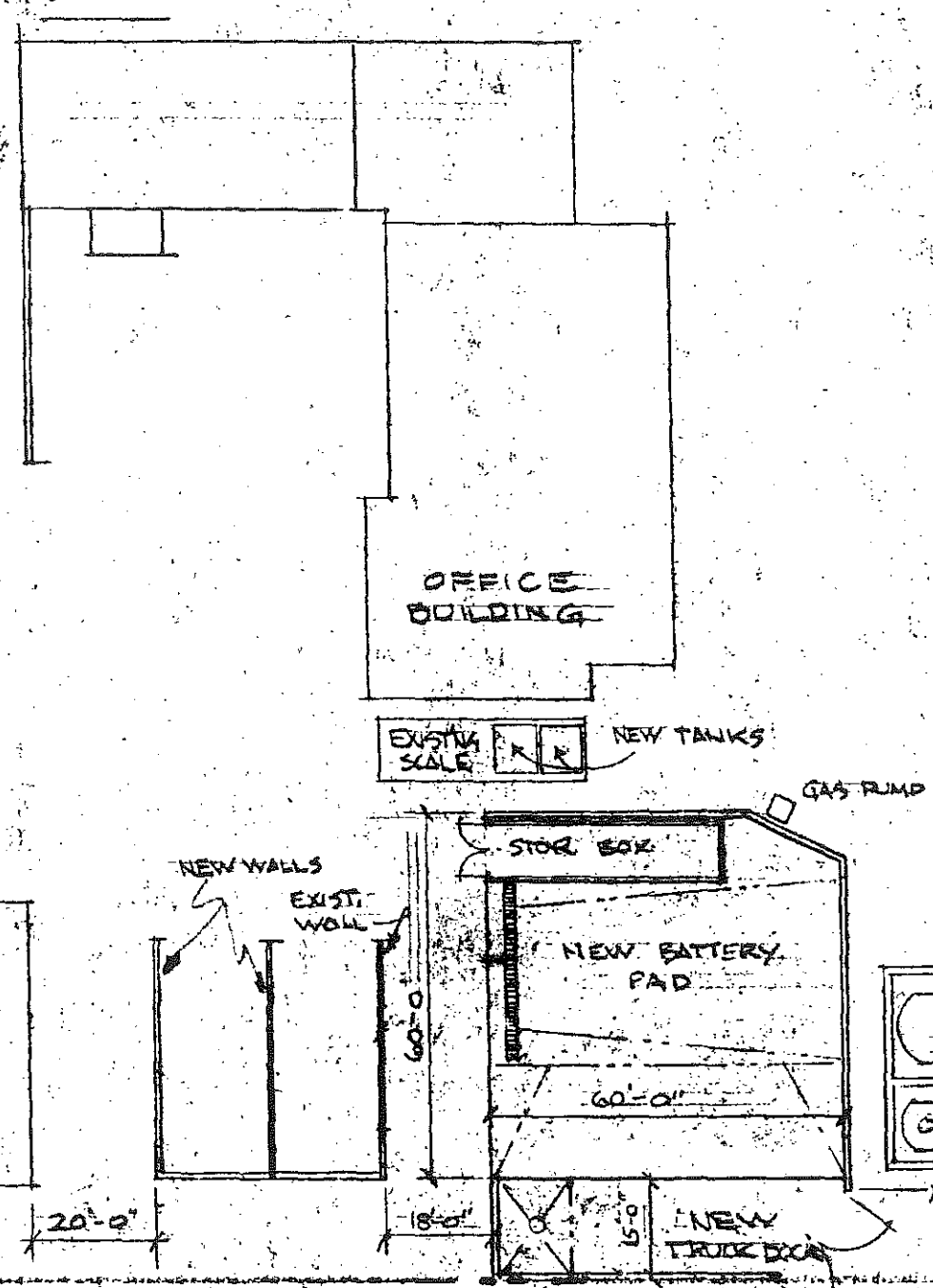


Appendix B: Proposed Storage Pad Diagram

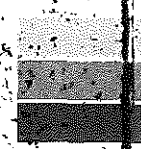


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P.O. Box 152 Richfield, Ohio 44286
Phone (216) 525-0990

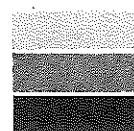
DIAGRAM #01



MASTER METALS
2850 WEST 3RD STREET
CLEVELAND OHIO



Appendix C: Storage Container Fabrication Quote



**Envisage
Environmental
Incorporated**

P.O. Box 152 Richfield, Ohio 44286
Phone (216) 526-0990

FROM **Proposal**
Henderson Fabricating
557 W. Glendale
Bedford Ohio 44146

Proposal No.

Sheet No.

Date

Proposal Submitted To

Work To Be Performed At

Name **MASTER METALS INC.**
Street **2850 W. 3rd**
City **Cleveland**
State **Ohio**
Telephone Number **621-2361**

Street **Same**
City _____ State _____
Date of Plans _____
Architect _____

We hereby propose to furnish all the materials and perform all the labor necessary for the completion of

MATERIAL CONTAINERS

- 1 Side walls & Bottom will be $\frac{1}{4}$ " mild steel
- 2 Bottom will be supported by 6" ship channel
- 3 Sides & Back will be supported by 6" C channel
- 4 Length of container will be ~~24'~~ 30' (approved by Doug)
- 5 width will be 12'-0"
- 6 Height will be 7'-0"
- 7 Delivery will be: First container 4 weeks and 1 container per week after that.

All material is guaranteed to be as specified, and the above work to be performed in accordance with the drawings and specifications submitted for above work and completed in a substantial workmanlike manner for the sum of Dollars (\$ **7,250.00**).

with payments to be made as follows:

Standard

Any alteration or deviation from above specifications involving extra costs, will be executed only upon written orders, and will become an extra charge over and above the estimate. All agreements contingent upon strikes, accidents or delays beyond our control. Owner to carry fire, tornado and other necessary insurance upon above work. Workmen's Compensation and Public Liability Insurance on above work to be taken out by **Henderson Fab.**

Respectfully submitted

Per

John P. Henderson p.
Doug Mickey

Note — This proposal may be withdrawn by us if not accepted within **90** days

ACCEPTANCE OF PROPOSAL

The above prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to do the work as specified. Payment will be made as outlined above.

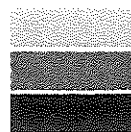
Accepted

Signature

Date

Signature

Appendix D: Industrial Rotary Kiln Furnace P.O./Quote



**Envisage
Environmental
Incorporated**

P.O. Box 152 Richfield, Ohio 44286
Phone (216) 526-0990

(216) 621-2361

PURCHASE ORDER

No. 62487

MASTER METALS INC.

2850 W. THIRD ST. CLEVELAND, OHIO 44113

TO

G & W Industries, Inc.
1898 Carter Road
Cleveland, OH 44113

SHIP
TO

DEPT.

DATE	6-24-87	FOB	G & W Shop	SHIP VIA	Truck	TERMS	* see below	TIME OF DELIVERY	10 weeks A.R.O.
------	---------	-----	------------	----------	-------	-------	-------------	------------------	-----------------

Please enter our order for the following items:

	QUANTITY	✓	DESCRIPTION	PRICE	UNIT
1	1 each		Rotary Furnace per your proposal &	\$110450.00	
2			specifications of June 1, 1987		
3	*\$27612.50		with Purchase Order		
4	\$71792.50		upon Delivery		
5	\$11045.00		Within 30 days of Delivery		
6					
7			All workmanship and materials warrented for		
8			90 days from date of placing into service.		
9					

NOTE Purchase Order Number Must Appear on all Packages and Invoices!
Kindly acknowledge this order confirming PRICE, F.O.B. POINT and date
when you anticipate shipping.

Original bill of lading must accompany all shipments.
If partial shipment of this order is made, notify us
promptly when you will complete.


Purchasing Agent

G & W INDUSTRIES, INC.

SHIP REPAIRING • STEEL FABRICATORS • MACHINISTS

1898 CARTER ROAD • CLEVELAND, OHIO 44113

PHONE: 216/621-7246

June 1, 1987

Master Metals Inc.
2850 W. Third Street
Cleveland, Ohio 44113
Attn: Mr. Douglas Mickey, President

Gentlemen:

Following our recent conversations, we are pleased to submit out proposal for a Rotary Furnace. Our quotation consists of the following:

One: 12' diameter x 15' O.A. long Rotary Furnace fabricated from $\textcircled{5/8}$ " thick fire-box quality steel. Furnace is equipped with dished heads firing and loading openings. Furnace rides on two machined, heat treated trunnion rings mounted on 1/2" thick wrapper bands. drive is accomplished by means of a ring and pinion gear. (Motor and reduction unit by others).

One: Heavy duty frame \downarrow to incorporate machined and hardened trunnion rolls with shafts and 5-7/16" diameter bearings. Double thrust rollers are employed to train the drum travel. Frame includes drive package mounting provisions.

One: Burner Transition End

One: Track mounted Charging Door.

One: Reversing Motor Starter

Items to be furnished by Master Metals unless specifically quoted by G & W
are:

1. Incoming electrical power
2. Concrete foundations as directed by G & W
3. Loading and transportation cost to job site
4. Combustion equipment and refractory


Total Price.....\$110,450.00

Terms: 25% with order
Balance when ready to ship

Freight: F.O.B. G & W Shop
Delivery: 10 weeks A.R.O.

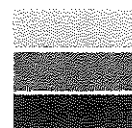
We certainly appreciate the opportunity to propose this equipment and look forward to working with you in the endeavor.

Very truly yours,


Richard J. Vilcheck
President

RJV/sg

Appendix E: Financial Projections



**Envisage
Environmental
Incorporated**

P.O. Box 152 Richfield, Ohio 44286
Phone (216) 526-0990

MASTER METALS, INC.
PROFORMA OPERATIONS & CASH FLOW FORECAST (1) (2)
(UNAUDITED)

	1987					1988							
	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY	MARCH	APRIL	MAY	JUNE	JULY	TOTAL
SALES (3)	\$420,000	\$430,000	\$430,000	\$410,000	\$340,000	\$353,000	\$341,000	\$423,000	\$379,000	\$433,000	\$441,660	\$450,493	\$4,851,153
COST OF MATERIAL (3)	167,434	171,420	171,420	163,447	135,542	159,000	120,000	176,000	160,000	\$154,000	\$157,000	\$160,000	\$1,895,264
GROSS MARGIN	252,566	258,580	258,580	246,553	204,458	194,000	221,000	247,000	219,000	279,000	284,660	290,493	2,955,889
OPERATING EXPENSES (3)	213,000	213,000	220,000	213,000	210,000	213,000	187,000	210,000	220,000	235,000	275,000	270,000	\$2,679,000
OPERATING PROFIT	39,566	45,580	38,580	33,553	(5,542)	(19,000)	34,000	37,000	(1,000)	44,000	9,660	20,493	\$276,889
INTEREST EXP	2,000	2,000	2,000	2,000	3,000	3,000	3,000	2,500	2,500	2,200	2,200	2,200	\$28,600
EARNINGS BEFORE INCOME TAXES	37,566	43,580	36,580	31,553	(8,542)	(22,000)	31,000	34,500	(3,500)	41,800	7,460	18,293	\$248,289
INCOME TAXES	0	0	0	0	0	0	0	0	0	0	0	0	\$0
NET EARNINGS	37,566	43,580	36,580	31,553	(8,542)	(22,000)	31,000	34,500	(3,500)	41,800	7,460	18,293	\$248,289
CASH INCREASES:													
DEPRECIATION	8,333	8,333	8,333	8,333	8,333	8,333	8,333	8,333	8,333	8,333	8,333	8,333	\$100,000
BANK LOAN (10)			10,000		100,000			(50,000)		(30,000)	(10,000)		\$20,000
CASH DECREASES:													
TAX CLAIMS (4)	0	(1,053)	(1,053)	(1,053)	(1,053)	(1,053)	(1,053)	(1,053)	(1,053)	(1,053)	(1,053)	(1,053)	(\$11,583)
REDUCE ACCTS PAYABLE (5)	(10,417)	(10,417)	(10,417)	(10,417)	(10,417)	(10,417)	(10,417)	(10,417)	(10,417)	(10,417)	(10,417)	(10,417)	(\$125,000)
POST SECURED CLAIMS (7)	0	0	0	0	0	0	0	0	0	0	0	0	\$0
NOTES PAYABLE-N/L (6)	0	(1,917)	(1,917)	(1,917)	(1,917)	(1,917)	(1,917)	(1,917)	(1,917)	(1,917)	(1,917)	(1,917)	(\$21,063)
CAPITAL EXP. (9)	(8,000)	(118,000)	(60,000)	(30,000)	(60,000)	0	0	0	0	0	0	0	(\$276,000)
CASH BEGINNING	00,000	107,483	28,009	9,536	6,036	32,441	5,300	31,335	10,782	2,229	8,976	1,383	\$00,000
CASH ENDING	\$107,483	\$20,009	\$9,536	\$6,036	\$32,441	\$5,300	\$31,335	\$10,782	\$2,229	\$0,976	\$1,383	\$14,623	\$14,623

ASSUMPTIONS:

- (1) ASSUMES THE PLAN IS SUBSTANTIALLY CONSUMMATION AS OF SEPTEMBER 1, 1987.
- (2) ASSUMES PAYMENT OF CLASS 10 ALLOWED CLAIMS PURSUANT TO TERMS OF THE PLAN.
- (3) SALES, COST OF SALES, AND OPERATING EXPENSES ARE BASED UPON MANAGEMENT'S CURRENT OPERATING ASSUMPTIONS
- (4) TAX CLAIMS WILL BE PAID OVER A SIX YEAR PERIOD.
- (5) ASSUMES ACCOUNTS PAYABLE WILL BE BROUGHT DOWN TO 45 DAYS OUTSTANDING AND OTHERWISE CURRENT.
- (6) ASSUMES THE CLASS SIX N.L. CLAIM WILL BE PAID IN ACCORDANCE WITH PLAN OF REORGANIZATION
- (7) ASSUMES POST-PETITION SECURED CLAIMS (SECTION 364 CLAIM) WILL BE PAID OVER 3 YEARS COMMENCING IN 1988
- (8) INCLUDES INTEREST ON S/H LOAN (\$65,000), NOTE PAYABLE N.L. (\$150,000), TAX CLAIMS
- (9) ASSUMES INSTALLATION OF A \$200,000, ROTARY FURNACE ; CONSTRUCTION OF EIGHT NEW STORAGE BINS (\$60,000); CONSTRUCT CONCRETE PAD FOR BATTERY BREAKING (\$25,000); YARD CLEAN UP AT \$2,000 FOR EIGHT WEEKS.
- (10) ASSUMES BANK LOAN OF \$100,000 UPON CONFIRMATION OF PLAN.

20477

CLOSURE PLAN
FOR
MARK'S CEMENT
DEMOLITION FILL SITE

SUBMITTED BY:

Envisage Environmental, Inc.

Submittal Date:

November 25, 1987

Copy to Ohio EPA - NEED
I-13-32
M.B.



**Envisage
Environmental
Incorporated**

P.O. Box 102 Highland Ohio 43026
Phone (216) 526-1000

SECRET

CLOSURE PLAN
FOR
MARK'S CEMENT
DEMOLITION FILL SITE

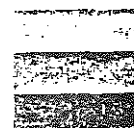
SUBMITTED BY:

Envisage Environmental, Inc.

Submittal Date:

November 25, 1987

Copy to Ohio EPA - NEDC
I-13-32
M.B.



**Envisage
Environmental
Incorporated**

P.O. Box 102 Bedford, Ohio 44011
Phone (216) 535-0900

I N D E X

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DECONTAMINATION PROCEDURES

- Excavation of Furnace Slag Material.....page 02

SAMPLING PLAN

- Soil Sampling Plan.....page 03

- Soil Sampling Equipment.....page 04

- Water Sampling Plan.....page 04

- Soil & Water Analysis Parameters.....page 04

POST EXCAVATION PROCEDURES.....page 05

- Interpretation of Soil Analysis.....page 05

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CERTIFICATION OF CLOSURE.....page 09

CLOSURE SCHEDULE.....page 10

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Diagram #02: Northern Excavation Grid.....page 12

Diagram #03: Southern Excavation Grid.....page 13

**Envisage
Environmental
Incorporated**

P.O. Box 152 Bedford, Mass 01730
Phone (216) 526-1500

Introduction:

This closure plan has been prepared in response to the accidental placement of hazardous Rotary Kiln Furnace Slag at the Mark's Cement Demolition Fill Site, located at 1000 Aurora Road.

The two shipments of furnace slag were placed in piles at two specific locations in the fill site. The material was leveled off within known measurable parameters.

Once notified of the hazardous nature of the furnace slag by the OEPA Twinsburg office, Mark's Cement personnel voluntarily began excavation and containerization of the furnace slag material.

RECOMMENDATION RECOMMENDATIONS:

The primary step in mitigating this accident is the excavation and containerization of the furnace slag material.

The following sections describe the excavation and removal of the contaminated fill into secure containers at the site.

Excavation of Furnace Slag Material

Prior to OEPA notification to Mark's Cement about the nature of this material, the two piles were leveled off during normal course of operations into an area estimated by the operator to be within the following dimensions:

Northern vein..... 20' x 20' maximum @ estimated 6" thickness
Southern vein..... 10' x 15' maximum @ estimated 6" thickness

By the time OEPA notified company officials, the material had already been covered, in the normal course of operating events, by 2-3 feet of demolition fill material.

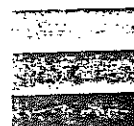
Therefore, the primary plan of excavation was to remove the normal fill material away from the contaminated "vein" resulting from the furnace slag material.

The top 2-3 feet of material was moved aside in order to gain access to the contaminated fill material. The original excavation areas are approximately 20'x20' (Northern) and 10'x15' (Southern).

Two portable dumpsters were obtained and lined with plastic, so that the excavated dirt and furnace slag could be placed into these tarped containers.

At that time Envisage Environmental field personnel were called to the site to obtain soil samples around the excavation "holes". Samples were obtained from the "ridges" and "bases" of the excavations and composited. Please note that these samples were not obtained in a scientific or random representative manner. Specific "pieces" of fill which appeared to be similar to the slag were obtained, therefore providing a bias to the sampling procedure. The advantage of this type of sampling method was the confirmation, based on the previous EP Toxicity results (see Appendix C), that not all the furnace slag material had been removed.

After these results were obtained, each excavation hole was widened to the present dimensions of 30'x40' (Northern) and 20'x22' (Southern). The additional removal completely filled the two on-site dumpsters. The excavation holes and dumpsters were covered with plastic tarps in order to minimize rain exposure to the soil.



The next stage of mitigating this accidental occurrence will be specifically designed random sampling of the excavation holes in order to determine if all the contamination has been removed. Also, removal of the filled dumpsters from the Mark's Cement should occur in the near future, after review and approval of this Plan by the Agency.

SAMPLING PLAN:

The Sampling Plan will focus on soil sampling, which will provide documentation that the decontaminated soil has been effectively excavated. Also, a plan of action for water sampling has been proposed.

Soil Sampling Plan:

The primary objective of a sampling plan at the Mark's Cement demolition fill site will be to collect samples that will provide representative, random, accurate and precise measurements of the EF Toxic properties of the remaining soil. The goal of sampling and analysis is to provide documentation that the site has been restored to its original uncontaminated state.

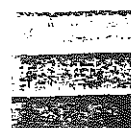
The method of "simple random sampling" was chosen in order to obtain the appropriate number of composited samples for analysis per the EF Toxicity Test as contained in 40CFR Part 261, Appendix II.

There will be three major "grid zones" in the Northern Area(#1-N, #2-N, #3-N) and three major grid zones in the Southern Area(#1-S, #2-S, #3-S). Each Grid Zone will be divided into equal 4 square foot(2'x2') numbered sections at the "floor" of each excavation.

Within each grid zone, 14 of the 2'x2' numbered sections will be randomly designated for sampling. The numbered sections will be selected prior to sample acquisition with a Random Numbers Table.

Each sample will be obtained with use of a soil grab apparatus entering the soil at a depth of 6 inches. The 14 samples obtained representing each grid zone will be equally composited, by weight, for analysis by utilizing cone and quartering techniques.

The calculations determining grid zone intervals and number of random samples required are contained in Appendix B. The Sampling Plan Map shows the precise grid zone sizes.



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The calculations determining grid zone intervals and number of random samples required are contained in Appendix B. The Sampling Plan Map shows the precise grid zone sizes.



2-21-97

Soil Sampling Equipment:

A "soil grab apparatus" will be utilized to sample the soil, with each sample segregated in labelled sealed bags for transport to the laboratory. The following sampling procedure will be utilized:

- Clean sampling apparatus.
- Insert sampler into soil within the randomly selected cubic foot area at a depth of six inches.
- Rotate apparatus to cut a core of the soil.
- Close and remove apparatus from soil.
- Transfer sample to collection bag.

Water Sampling Plan:

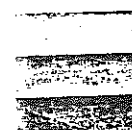
Along with the above soil samples, surface water samples will be obtained from the areas surrounding the Demolition Fill Site.

The areas surrounding directly southwest of the Demolition Fill Site are comprised of scattered pockets of surface water resulting from storm water runoff from Aurora Road and surrounding higher elevation areas, including the fill. This surface water eventually drains into the storm drainage trench located approximately 100-150 feet directly south of the fill site. This drainage trench is stagnant, and only flows from east to west during periods of high runoff volume, therefore is not technically defined as a "creek".

Preliminary water samples will be obtained from the locations of water accumulation, along with samples from the drainage trench.

Soil & Water Analysis Parameters:

Each Soil Grid sample (ie: #1-N, #2-N, #3-N, #1-S, #2-S, #3-S) will be analyzed for the parameters Lead and Cadmium using the EP Toxicity Test contained in 40CFR Part 261 Appendix II.



POST EXCAVATION PROCEDURES:

The results of the previous testing will determine the next steps to be taken at the site.

Interpretation of Soil Analysis:

The following two possibilities exist:

Possibility #1: The Lead and/or Cadmium levels will be below the Maximum Acceptable Limits of the EP Toxicity Test.

In this case, no further removal of soil will occur. This result would point out that the Lead and Cadmium contamination has been removed and does not pose a "leaching" threat to the environment.

Possibility #2: The Lead and/or Cadmium levels will be above the Maximum Acceptable Limits of the EP Toxicity Test.

In this case, a greater volume of soil will be removed from the appropriate excavation area. Once this has occurred, resampling of the soil will occur, as discussed in the Soil Sampling Plan, until the desired decontamination is obtained.

Interpretation of Water Analysis:

The surface water samples will be analyzed for Lead and Cadmium contamination. The following possibilities exist:

Possibility #1: Lead and/or Cadmium will not be present in the water.

In this case, the long-term sampling plan will be implemented as discussed in Post Closure Responsibilities, Section 01.

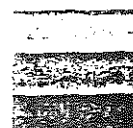
Possibility #2: Lead and/or cadmium will be present in the water.

In this case, the following procedures will take place:

- a) A resample of the area will be conducted within one week.

Water samples will be obtained from the same sampling points, along with points further from the fill site in order to determine the extent of contamination.

If contamination is not present, the Post-Closure Responsibilities, Section 02, will be fulfilled.



- b) If the retest confirms the Lead and/or Cadmium contents of the surrounding surface water, an impermeable clay cap will be installed at the portion of the demolition fill site which had contained the excavated furnace slag. This will be done in order to prevent water from entering the fill.

In addition, sumps will be installed throughout the area surrounding the demolition site within one month. A minimum of four sumps will be installed.

The sumps will be constructed in a manner which will allow surface and near surface water to enter and be readily collected for sampling. A water sample from each sump will be collected and analyzed on a monthly basis for six months.

If contaminatizon ceases, the Post Closure Responsibilities, Section 03, will be fulfilled.

- c) Discovery of Lead and/or Cadmium contamination in the surface sumps for more than two consecutive months will initiate further mitigating steps.

A ground water monitoring well will be installed in a location agreed upon by the Agency for the purpose of determining the extent of ground water contamination. Water samples from the sumps and monitoring well will be obtained and analyzed monthly for a period of six months.

If contamination is not present in the monitoring well during this six month period, Post Closure Responsibilities, Section 04 will be initiated.



DISPOSAL OF CONTAMINATED SOIL:

After the contaminated soil has been containerized, an effective method of disposal will be sought. The goal of this section is to describe the alternatives for safe, efficient removal of the containerized soil in a manner which complies with applicable regulations. A major objective, also, is to reduce the amount of time that the containerized soil is stored at the Mark's Cement site.

The following Plan is offered:

1) The two containers of contaminated soil will be sampled and analyzed for the EP Toxic Metals Cadmium and Lead. The disposition of the material will be dependent on the results of this testing, as follows:

- a) If the material does not exhibit concentrations above the Maximum Allowable for Cadmium and Lead of 1.0 mgs/l and 5.0 mgs/l, respectively, the material is a non-regulated waste per 40 CFR Part 261.24.

In this case, the container(s) will be transported to the nearest approved non-hazardous disposal facility. The advantages of this disposal procedure are:

- Large reduction in transportation mileage, thereby reducing the possibility of a transportation-related incident.
- Reduced possibility of additional site impairment which could occur if the waste material remained on-site for an extended period of time.

The approval time for acceptance of a waste material at a hazardous waste facility is typically a significant period. Unnecessary storage of the material on the Mark's Cement Demolition Site would occur if the material was destined for a hazardous waste facility.

Therefore, if the material is shown to be non-hazardous, and sent to a non-hazardous disposal facility, it will be removed from site in a safer and quicker manner.

- b) If the material does exhibit concentrations above the Maximum Allowable for Cadmium and Lead of 1.0 mgs/l and 5.0 mgs/l, respectively, the material is a regulated hazardous waste per 40 CFR Part 261.24.

In this case, the container(s) must be transported to a facility approved to handle Cadmium(D006) and/or Lead(D008) waste materials.

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Closure Plan: Mark's Cement(continued)

Cadmium(D006)-contaminated waste: Any container exhibiting the EP Toxicity characteristic for the metal cadmium will be sent to a licensed hazardous waste disposal facility.

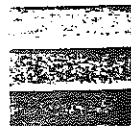
Lead(D008)-contaminated waste: Any container exhibiting only the EP Toxicity characteristic for the metal Lead will be sent to the Master Metals facility. Master Metals has filed their Part A application, which includes D008, Lead(but not D006). In complying with thier interim status permit for containerized wastes, Master Metals will keep the material in the same container(s) utilized for transportation of the material to their facility. The advantages of sending Lead-only contaminated material to Master Metals is as follows:

- It is not a violation of their interim status permit for containerized D008 wastes.
- The transportation distance, therefore highway liability, is reduced.
- The approval delay time for another hazardous facility is greatly reduced, therefore the storage containers of contaminated soil can be removed from the Mark's Cement site in an expeditious manner.

Once at the Master Metals facility, the material will remain containerized. The lead-contaminated soil will be processed in the Rotary Furnace, therefore recovering the lead contamination.

The resulting soil will become part of the non-hazardous slag material. As shown in the most recent correspondance (included with this plan), the Rotary Furnace Slag has always been non-hazardous when segregated from contamination by raw material.

Therefore, by processing the lead-only contaminated soil at Master Metals, the lead will be recovered rather than sent to a landfill and the resulting slag will be non-hazardous.



Closure Plan: Mark's Cement (continued)

POST_CLOSURE_RESPONSIBILITIES:

The Post-Closure responsibilities will vary based on the results of initial soil/water investigation/testing, the extent of environmental impairment and the steps taken to mitigate the situation.

Each "Section" below defines procedures that will be followed in the event of certain events or "possibilities" as described in the Post Excavation Procedures Section of this Closure Plan.

Post_Closure_Section_01: Post Closure responsibilities will consist of quarterly water samples obtained from the surface water in the vicinity of the demolition fill and drainage trench. This quarterly sampling will occur for the calendar year 1988.

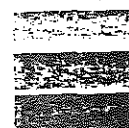
Post_Closure_Section_02: Post Closure responsibilities will consist of quarterly water samples obtained from the surface water in the vicinity of the demolition fill and drainage trench. This quarterly sampling will occur for the calendar year 1988 and 1989.

Post_Closure_Section_03: Post Closure responsibilities will consist of monthly water samples obtained from the installed sumps for an additional six month period. After this time, samples will be obtained and analyzed quarterly for a one year period.

Post_Closure_Section_04: Post Closure responsibilities will consist of monthly water samples obtained from the installed sumps and monitoring wells for an additional six month period. After this time, samples will be obtained and analyzed quarterly for one year.

CERTIFICATION_OF_CLOSURE:

Closure Certification will be performed by a Registered Professional Engineer upon completion of the appropriate phases of this Closure Plan. Closure completion is regarded as the point at which Post Closure Responsibilities, as defined by Post Closure Sections #01, #02, #03 or #04, have been performed with satisfactory testing results.



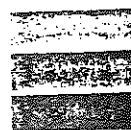
Closure Plan: Mark's Cement (continued)

CLOSURE SCHEDULE:

The Closure Schedule is variable based on factors yet to be determined, such as; remaining soil contamination, surface water evaluation and regulatory status of containerized soil.

The best time estimate is as follows, from the date of Agency approval of this Closure Plan:

- 1) Excavate contaminated soil and place in containers.....completed.
- 2) Obtain samples of remaining soil and surface waters.....Week One
- 3) Sample contaminated soil in containers for disposal evaluation.....Week One
- 4) Receive analytical results of remaining soil quality and surface water analysis.....Week Three
- 5) Receive analytical results of containerized soil.....Week Three
- 6) Discuss results with all parties involved and Agency....Week Four
- 7) Implement Water Sampling Plan.....Week Five
- 7(a) Transport material to non-hazardous facility, or to Master Metals facility for Lead-only contaminated material.....Week Five
- 7(b) File application for approval at hazardous waste facility (if necessary).....Week Five
- Wait for approval for disposal at hazardous waste facility..... ?
- Obtain approval and make arrangements for shipment....Week Nine
- Transport material to hazardous waste facility.....Week Ten



DE. JUNCTION FILL SITE

AURORA ROAD

ENTRANCE

STORM DRAIN
MANHOLE

FILL
RIDGE

SOLID CONCRETE
DRAIN PIPE
(30-40' DEPTH)



30' x 40'

NORTHERN
AREA

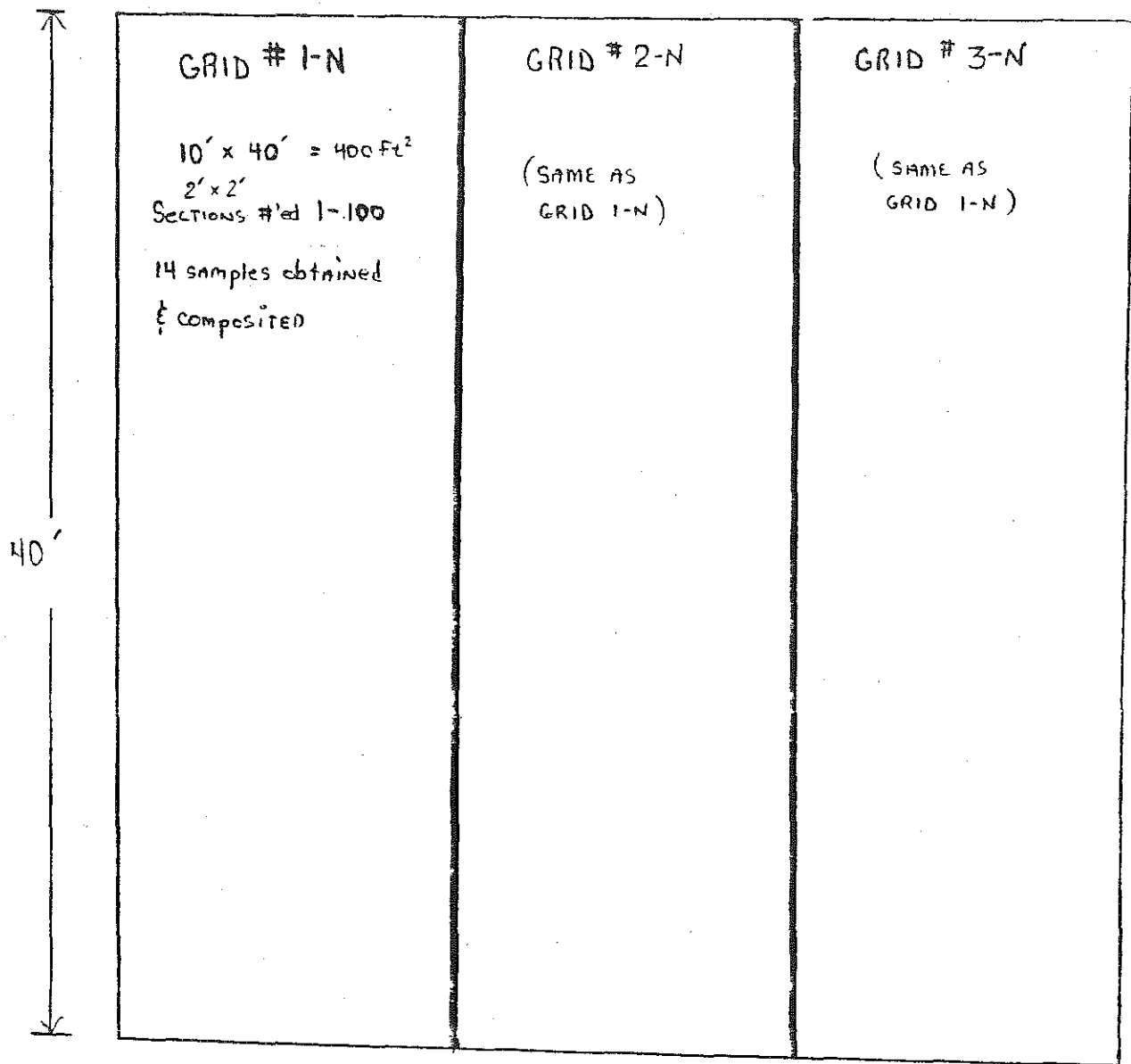
20' x 22'

SOUTHERN
AREA

~ 100-150 FT to EAST/WEST

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Incorporated
P.O. Box 1528
Phone (216) 526-1200

NORTHERN AREA



 NORTH

SCALE: (APPROX.)

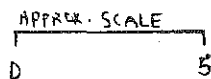
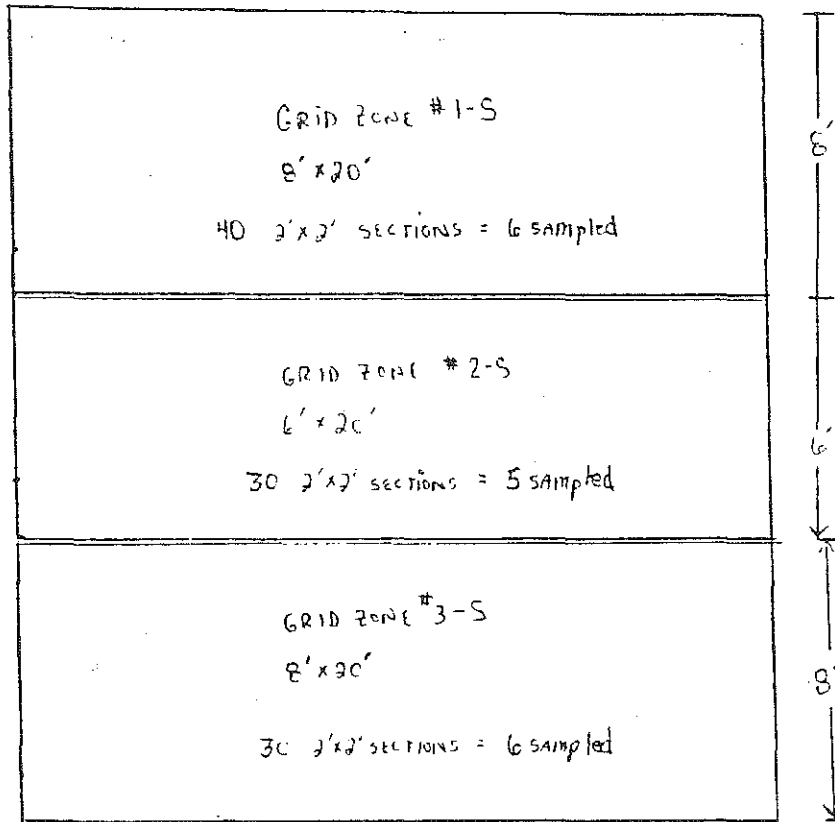
0 5 Feet



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Phone (617) 26-0990

SOUTHERN TIE H



**Envisage
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Phone (216) 526-0001

ROBERT OTTO CARSON

ATTORNEY AT LAW

653 BROADWAY AVENUE, SUITE 210 • BEDFORD, OHIO • 44146

(216) 439-5959

November 30, 1987

Mark Bergman
Environmental Scientist
OHIOEPA
Northeast District Office
2110 E. Aurora Road
Twinsburg, OH 44087-1969

Re: Mark's Cement, Inc.

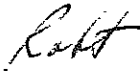
Dear Mr. Bergman:

I would like to take this opportunity to thank you for meeting me on the spur of the moment in your office to discuss the rough draft for a closure plan prepared by David Munson.

I appreciate you taking the time to go over this report with me so that I can frame a second draft. Your comments have enabled me to move forward quickly and avoid several months of delay.

I plan to call you upon your return to Cleveland.

Very truly yours,



Robert Otto Carson

ROC/tyl

RECEIVED
DEC 2 - 1987
OHIO EPA-N.E.D.O

ENVISAGE ENVIRONMENTAL INCORPORATED

P.O. Box 152, Richfield, Ohio 44286

Phone (216) 526-0860

REPORT NO. 87-1940 (0212CA)

COMPANY Mark's Cement

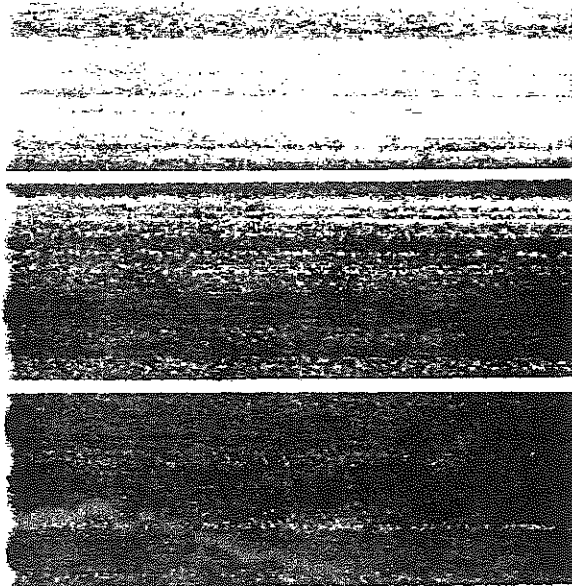
TITLE Sampling Plan

DATE 12-1-87

MARK'S CEMENT COMPANY
AURORA, OHIO

DEMOLITION FILL SITE
SAMPLING PLAN

CONDUCTED - DECEMBER 1, 1987



MARK'S CEMENT DEMOLITION FILL SITE

S A M P L I N G P L A N

Conducted: December 01, 1987

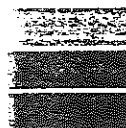


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*Grid # 2-S Diagram.....	page 11



Introduction:

The Sampling Plan for the soil was conducted on December 01, 1987 at the Mark's Cement Demolition Fill site. The sampling occurred within the guidelines described in the Closure Plan, as submitted to the OEPA on November 25, 1987.

Site Description:

At the site, there are two separate areas where the contamination has been removed and placed into dumpsters.

The area closest to Aurora Road was designated as the "Northern Area(N)" and the area further from Aurora Road was designated as the "Southern Area". The dimensions of these excavations were:

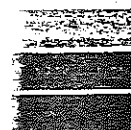
	Width	Length	Depth
Northern Excavation:	30 feet	30 feet	6 feet
Southern Excavation:	10 feet	15 feet	6 feet

Soil Sampling Plan:

The primary objective of the sampling plan at the Mark's Cement demolition fill site was to collect samples that provided representative, random, accurate and precise measurements of the EP Toxic properties of the remaining soil.

The results of the sampling will, after review, provide a basis for further progress toward decontamination and closure of the affected areas.

The method of "simple random sampling" was chosen in order to obtain the appropriate number of composited samples for analysis per the EP Toxicity Test as contained in 40CFR Part 261, Appendix II.



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Sampling Plan: Mark's Cement(continued)

Each Excavation was divided into individual sampling zones (ie: Grid Zones). The number of Grid Zones per excavation was determined by applying Random Sampling Calculations. The following results were obtained:

Northern Excavation...3 separate Grid Zones(#'s 1-N, 2-N, 3-N)
Southern Excavation...2 separate Grid Zones(#'s 1-S, 2-S)

Each Grid Zone will be divided into equal 1 square foot(1'x1') numbered sections at the "floor" of each excavation.

Within each Grid Zone, the 1'x 1' sections were numbered, as shown on the Grid Diagrams enclosed in this report. The number of sections in each Grid Zone were as follows:

Northern Excavation:

Grid Zone # 1-N.....300 sections numbered 001-300
Grid Zone # 2-N.....300 sections numbered 001-300
Grid Zone # 3-N.....300 sections numbered 001-300

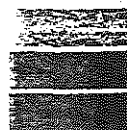
Southern Excavation:

Grid Zone # 1-S.....150 sections numbered 001-150
Grid Zone # 2-S.....150 sections numbered 001-150

Within each grid zone, 14 of the 1'x 1' numbered sections were randomly designated for sampling. The numbered sections were selected with a Random Numbers Table, prior to sample acquisition. These numbers represent the EXACT locations within each Grid Zone where sampling occurred.

The random numbers obtained for each Grid Zone are listed below, in order of actual appearance from the Random Number Program.

<u>Grid 1-N</u>	<u>Grid 2-N</u>	<u>Grid 3-N</u>	<u>Grid 1-S</u>	<u>Grid 2-S</u>
188	47	74	17	90
287	214	114	19	79
161	63	6	2	75
44	19	275	111	56
127	28	8	44	121
155	49	246	50	53
167	153	78	54	85
210	246	117	126	120
98	9	48	75	93
182	159	65	38	127
253	222	280	123	14
247	149	106	13	66
07	211	164	35	112
51	31	184	60	39



The following chart summarizes:

Excavation	# of Grid Zones	# of composites analyzed	# grabs
Northern	three(#1-N, 2-N, 3-N)	three(1 composite/Grid)	14/composite
Southern	two(#1-S, 2-S)	two(1 composite/Grid)	14/composite

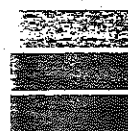
Soil Sampling Equipment:

Each sample was obtained with use of a soil grab apparatus entering the soil at a depth of 4-6 inches. Each grab sample was segregated in labelled sealed bags for transport to the laboratory.

The 14 random grab samples obtained from each Grid Zone were equally composited, by weight, for analysis by utilizing cone and quartering techniques.

The Grid Zone Diagrams show the precise grid zone sizes, numbering systems, and sample locations for each Grid Zone.

Each Grid Zone soil sample(ie: #1-N, #2-N, #3-N, #1-S, #2-S, #3-S) was analyzed for all EP Toxic Metals using the EP Toxicity Test contained in 40CFR Part 261 Appendix II.



ANALYTICAL RESULTS:

Soil Analysis Results:

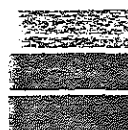
The results in this chart are reported in mgg/liter.

Parameters	Grid_1-N	Grid_2-N	Grid_3-N	Grid_1-S	Grid_2-S
Arsenic	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Barium	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Cadmium	< 0.01	0.02	0.02	< 0.01	< 0.01
Chromium	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
Lead	0.60	0.25	0.25	< 0.05	0.10
Mercury	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Selenium	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05
Silver	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05

The EP Toxicity Lead and Cadmium levels in the Southern Excavation Area were extremely low, as seen in the two samples representing this area(Grid #1-S & Grid # 2-S).

The EP Toxicity Lead and Cadmium levels in the Northern Excavation Area, as represented by Grid Zone samples 1-N, 2-N & 3-N, were low.

As compared to the initial testing performed by the OEPA, the lead contamination of the soil was reduced by, at least, 99.995%.



Sampling Plan: Marx's Cement Site (continued)

Dumpster Analysis Results:

The dumpsters, labelled #01 and #02, were analyzed twice over the past two months.

During early November, one sample representing the two dumpsters was obtained. At that time the dumpsters were approximately one-half full. On December 01, 1987, additional grab samples were obtained from the top one-foot of each dumpster for analysis. This sampling represented the additional soil added to the container, thereby filling each container with additional soil removed from the excavation areas.

The analytical results were as follows:

***** DUMPSTER *****			
Parameter	#01(top 1')	#02(top 1')	#1/#2 bottomhalf composite
Arsenic	< 0.05 mgs/l	< 0.05 mgs/l	< 0.05 mgs/l
Barium	0.50 mgs/l	0.30 mgs/l	0.35 mgs/l
Cadmium	0.05 mgs/l	0.08 mgs/l	0.03 mgs/l
Chromium	< 0.01 mgs/l	< 0.01 mgs/l	0.02 mgs/l
Lead	2.60 mgs/l	2.80 mgs/l	0.20 mgs/l
Mercury	< 0.05 mgs/l	< 0.05 mgs/l	< 0.05 mgs/l
Selenium	< 0.05 mgs/l	< 0.05 mgs/l	< 0.05 mgs/l
Silver	< 0.05 mgs/l	< 0.05 mgs/l	< 0.05 mgs/l

As shown in these results, the second round of material (ie: top layer) contained more Lead and Cadmium than the first material removed (ie: #1/#2 composite). These results indicate that the soil removal process was more effective during the second removal process when the dumpsters were filled.

The above analysis represents the top and middle layers of the Dumpsters. All data indicate that the soil material, although contaminated with the Lead and Cadmium removed from the excavation areas, is a non-hazardous waste material.

As described in the Closure Plan submitted on November 25, 1987, this material will be sent, upon approval, to a non-hazardous landfill for disposal.



Surface Water Analysis:

On November 13, 1987, surface water samples were obtained from the areas surrounding the Demolition Fill Site.

The areas surrounding directly southwest of the Demolition Fill Site are comprised of scattered pockets of surface water resulting from storm water runoff from Aurora Road and surrounding higher elevation areas, including the fill. This surface water eventually drains into the storm drainage trench located approximately 100 feet directly south of the fill site.

This drainage trench is stagnant, and only flows from east to west during periods of high runoff volume, therefore is not technically defined as a "creek".

Also, water runoff samples were obtained north of the site along Aurora Road.

The results are as follows:

TOTAL?

	<u>Lead</u> -----	<u>Cadmium</u> -----
Northern Puddle	< 0.05 mgs/l	< 0.01 mgs/l
Middle Puddle	< 0.05 mgs/l	< 0.01 mgs/l
Trench Discharge	< 0.05 mgs/l	< 0.01 mgs/l
Aurora Road Runoff	< 0.05 mgs/l	< 0.01 mgs/l

Lead and Cadmium were not found in the surface water samples.



1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21									30
31									40
41			44						50
51									60
61									70
71									80
81									90
91							98		100
101	102	103	104	105	106	107	108	109	110
111									120
121						127			130
131									140
141									150
151				155					160
161						167			170
171									180
181	182						188		190
191									200
201	202	203	204	205	206	207	208	209	210
211									220
221									230
231									240
241						247			250
251		253							260
261									270
271									280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300

000000

ROAD



GRID #

2-N

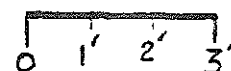
GRID #

3-N

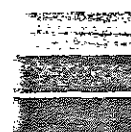
* GRID SIZE: 10' x 30'

* NORTH EXCAVATION
SIZE: 30' x 30'

* SCALE:



* 14 RANDOM GRAB Samples
COMPOSITED (SAMPLE #1-N)

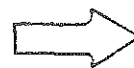


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1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21							28		30
31									40
41						47		49	50
51									60
61		63							70
71									80
81									90
91									100
101	102	103	104	105	106	107	108	109	110
111									120
121									130
131									140
141								149	150
151		153						159	160
161									170
171									180
181									190
191									200
201	202	203	204	205	206	207	208	209	210
211			214						220
221	222								230
231									240
241					246				250
251									260
261									270
271									280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300

FURBER
ROAD



GRID #

1-N

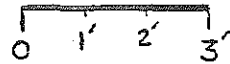
GRID #

3-N

* GRID SIZE: 10' x 30'

* NORTH EXCAVATION
SIZE: 30' x 30'

* SCALE:



* 14 RANDOM GRAB Samples
composited (Sample # 2-N)

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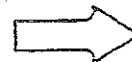
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GRID 2-N

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31									40
41							48		50
51									60
61				65					70
71			74				78		80
81									90
91									100
101	102	103	104	105	106	107	108	109	110
111			114			117			120
121									130
131									140
141									150
151									160
161			164						170
171									180
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191									200
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211									220
221									230
231									240
241					246				250
251									260
261									270
271				275					280
281	282	283	284	285	286	287	288	289	290
291	292	293	294	295	296	297	298	299	300

EURORA

ROAD



GRID #

1-N

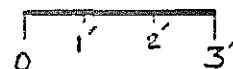
GRID #

2-N

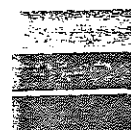
* GRID SIZE: 10' x 30'

* NORTH EXCAVATION
SIZE: 30' x 30'

* SCALE:



* 14 RANDOM GRAB SAMPLES
COMPOSITED (SAMPLE 3-N)



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GRID # 1-S

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
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61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
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91	92	93	94	95	96	97	98	99	100
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121	122	123	124	125	126	127	128	129	130
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AURORA
ROAD



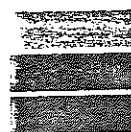
GRID
#2-S

* 14 GRABS COMPOSITED IN THIS GRID (SAMPLE 1-S)

* GRID SIZE: 10' x 15'

* SOUTH EXCAVATION SIZE: 20' x 15'

* SCALE:



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GRID # 2-S

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
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121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150

AURORA
ROAD



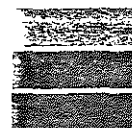
GRID
#1-S

* 14 RANDOM GRABS COMPOSITED INTO ONE SAMPLE (#2-S)

* GRID SIZE: 10' x 15'

* SOUTH EXCAVATION SIZE: 20' x 15'

* SCALE:



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